



Rensselaer

Department of Mechanical,
Aerospace, and Nuclear Engineering

Graduate Student Handbook

AY18-19

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Chapter 1

Department of Mechanical, Aerospace & Nuclear Engineering

The Department of Mechanical, Aerospace, and Nuclear Engineering (MANE) is part of Rensselaer's School of Engineering (SoE). MANE offers four interconnected but distinct graduate programs leading to a master's or doctoral degree: Mechanical Engineering (MECL), Aerospace Engineering (AERO), Nuclear Engineering (NUCL), and Engineering Physics (EPHY).

1.1 The MANE Office of Graduate Student Services (OGSS):

The MANE Office of Graduate Student Services (OGSS) is located in Jonsson Engineering Center (JEC) 2002. This office was established by the MANE department to assist graduate students as they navigate through the challenges they may face as a master's or doctoral student at Rensselaer. All necessary graduate student forms and advice to help students complete them can be found here. The OGSS also provides degree program information and planners, information on applying to graduate programs, help with scheduling and course registration issues, details on external funding programs, and guidance for students planning their future careers.

1.2 Contact List for MANE:

Graduate Student Resources

Office of Graduate Student Services (JEC-2002)

Graduate Programs Director:	Theodorian Borca-Tasciuc (borcat@rpi.edu)
Sr. Student Administrator:	Beth Ann Macey (maceyb2@rpi.edu)
Administrative Specialist:	Sue Miller (milles7@rpi.edu)

MANE Department Offices (JEC-2049)

Department Head:	Suvranu De (des@rpi.edu)
Administrative Coordinator, Sr.:	Colleen Bonesteel (carroc@rpi.edu)
Administrative Specialist:	Hollis McEvilly (mcevih@rpi.edu)

Office of Undergraduate Student Services (JEC-2012)

Undergraduate Programs Director:	Tom Haley (haleyt@rpi.edu)
Sr. Student Administrator:	TBA
Administrative Specialist:	Julia Schatz (schatj4@rpi.edu)

Technical Support

Technical Manager: Randy McDougall (mcdour@rpi.edu)
Academic Support Technician: David DiGiulio (degiud@rpi.edu)
Desktop Support Analyst: Kenneth Hargrove (hargrk@rpi.edu)

Financial Support

Business Manager: Amy Edmans (edmana2@rpi.edu)
Business Administrator: Lori Robichaud (robicl@rpi.edu)
Administrative Specialist: Jan Lajeunesse (lajeuj@rpi.edu)
Operations Associate: Esther Rendano (rendae@rpi.edu)

MANE Department Website Links:

MANE Department Website: <http://mane.rpi.edu>
Faculty: <http://mane.rpi.edu/people>
Research: <http://mane.rpi.edu/research>
Labs: <http://mane.rpi.edu/labs>
Education for Working Professionals: <http://mane.rpi.edu/aps>

General Links:

The Institute Catalog: <http://catalog.rpi.edu/>
Academic Calendar: <http://www.rpi.edu/academics/calendar/>
Institute Tuition Policy: <http://gradoffice.rpi.edu/update.do?catcenterkey=17>
Student Information System: <https://sis.rpi.edu/>
Graduate Admissions (Co-Terminal Applicants): <http://gradoffice.rpi.edu/update.do?catcenterkey=33>
Graduate Student Forms: <http://gradoffice.rpi.edu/update.do?catcenterkey=20>
Registrar Forms: <http://registrar.rpi.edu/update.do?catcenterkey=29>
Office of Graduate Education (OGE): <http://gradoffice.rpi.edu/setup.do>
Thesis Submission Information & Forms: <http://gradoffice.rpi.edu/update.do?catcenterkey=31>
Rensselaer Libraries: <https://library.rpi.edu/>
Learning Management System: <https://lms.rpi.edu/>
UMI ETD Administrator (Thesis): <https://secure.etdadmin.com/cgi-bin/school?siteId=489>
External Funding Opportunities: <http://gradoffice.rpi.edu/update.do?artcenterkey=300>
Student Advisory Council: https://www.rpi.edu/dept/ne/public_html/Sgroups.html
Career Development Center: <http://www.rpi.edu/dept/cdc/>
Co-op/Internships: <https://www.rpi.edu/dept/cdc/students/experience/coop/index.html>

1.2.1 Important Dates:

August 30, 2018	Classes begin.
September 3, 2018	Labor Day - no classes
September 14, 2018	Fall 2018 Add Deadline and last day for NE grade requirements for Spring 2018.
September 21, 2018	December 2018 Degree Application Deadline Nomination of Master's Thesis Committee and Degree Designation forms due.
October 8, 2018	Columbus Day. No classes.
October 9, 2018	Classes resume. Follow a Monday class schedule.
October 22 - November 2, 2018	Advisement for spring registration. Students should consult their faculty advisers.
October 24, 2018	Last day for graduate students to drop a course.
November 2, 2018	Doctoral dissertations due to advisers.
November 5 - November 19, 2018	Spring 2019 Registration
November 9, 2018	Master's theses and engineering projects due to advisers.
November 19, 2018	Master's theses due in the Office of Graduate Education
November 20, 2018	Last day to defend doctoral dissertations. Thanksgiving recess begins.
November 21 - November 23, 2018	No classes.
November 30, 2018	Doctoral dissertations due in the Office of Graduate Education.
December 12, 2018	Last day of classes.
December 13, 2018	MANE M.E. Project Presentations
December 13 - December 16, 2018	Reading Days - no classes (Weekend)
December 17 - December 21, 2018	Final Examinations.
December 17, 2018	Add/Drop reopens for Spring 2019.
December 22, 2018	Winter recess begins.
December 25 - January 1, 2019	Holiday Winter Break-Institute is closed.
December 31, 2018	Official date of December graduation.
January 10, 2019	Classes begin. Thursday = Monday.
January 11, 2019	Friday = Tuesday Classes.
January 21, 2019	Martin Luther King Jr. Day. Staff holiday. No classes.
January 23, 2019	Last day for students to add courses or change sections or to put courses on audit.
February 8, 2019	May 2019 Degree Applications deadline. Nomination of Master's Thesis Committee and Degree Designation forms due.
February 18, 2019	President's Day. No classes. Staff holiday.
March 1, 2019	Summer registration begins. Last day for graduate students to drop courses.
March 1, 2019	Doctoral dissertations due to advisers. Master's theses and projects due to advisers.
March 4 - March 8, 2019	Spring Break.
March 11- March 22, 2019	Advisement for Fall registration. Students should consult their faculty advisers.
March 25 - April 8, 2019	Registration for all currently enrolled students for the Fall semester.
March 29, 2019	Last day to defend doctoral dissertations. Master's theses due to OGE.
April 12, 2019	Doctoral dissertations due in the Office of Graduate Education.
April 26, 2019	Last day of classes.
April 27 - April 29, 2019	Reading Days-no classes. (Weekend)
April 29, 2019	MANE M.E. Project Presentations
April 29, 2019	Add/Drop reopens for Fall 2019.
April 30 - May 4, 2019	Final Examinations.
May 17, 2019	ROTC Commissioning Ceremony.
May 18, 2019	Commencement.

1.3 MANE General Graduate Policies:

1.3.1 Advising Structure:

Most graduate students will be assigned a graduate advisor at the beginning of the first semester in the program. Any concerns which a student might have, should be discussed with their advisor first. If there is no resolution, concern can be discussed with the Graduate Program Director (GPD) and finally, if necessary, the Department Head.

1.3.2 Forms and Procedures:

Students and their advisors must sign each form submitted to the GPD for review. All forms are to be directly submitted to the MANE Office of Graduate Student Services (OGSS) for consideration by the GPD or Department Head where appropriate. Once approved by the GPD, forms are forwarded to the Office of Graduate Education (OGE) for processing.

Graduate student forms can be found in the Appendices section of this handbook. They can also be found at the [Office of Graduate Education](#) and/or [Registrar](#) websites.

1.3.3 Semester Registration Credits:

Graduate students must register for at least 12 credits each semester, with a maximum of 15 credits, to maintain full-time status. The only exception to this requirement is for students serving as **teaching assistants**. These students may register for a minimum of 9 credits to maintain their full-time status. Students registering for more than 15 credits during the fall or spring terms will be charged the academic year tuition rate plus a per-credit-hour rate for each credit hour exceeding 15 credits, and requires approval from OGE.

Summary of registration requirements for the Department of Mechanical, Aerospace & Nuclear Engineering (MANE):

- Students who are serving as TAs must register for a minimum of 9 credit hours (but no more than 15 credit hours) for the fall and spring semesters.
- Students not serving as TAs must register for 12-15 credit hours for the fall and spring semesters.
- Student who received support during the summer must register for Summer Administrative Registration (**ADMN-6600**), but cannot take credit-bearing courses or research credits.
- Normal tuition charges apply for students who take credit-bearing courses or research credits during the summer. **Students must make sure to discuss this with their advisors before registering.**
- Students must be registered each term in order to receive their degree.
- Each full-time student must register each semester for Graduate Seminar (MANE-6900), attend each seminar, and meet all requirements. **This requirement does not apply to co-terminal students.**

It is critical that the registration requirements described above are met to be considered for full-time study. This is especially important for international students who have to meet certain visa requirements, but more generally for all students, in order to meet Rensselaer's residency requirements.

1.3.4 Transferring Credits:

In order to apply to transfer credits, the student must complete a [Transfer Credit Approval Form](#). Courses considered eligible for transfer must have been completed no more than 5 years prior to matriculation at Rensselaer. No more than 6 credits can be transferred for a master's degree and no more than 24 credits for a PhD degree. Graduate students must earn the equivalent of an A or B grade to transfer credit. No grade is shown on the

RPI transcript for transfer credits and the grade from transferred courses do not factor into the RPI GPA. However, transferred credits do count in the total earned hours.

To complete the form students must:

- Obtain a course syllabus for the course they wish to take / have taken and a syllabus for the Rensselaer equivalent course. These courses must be evaluated by the corresponding RPI department. For example, if a student wants to transfer a Mathematics course, they will need prior approval from the RPI Mathematics Department.
- Include an official or unofficial transcript with the form if the course has already been completed. The student must also have the other college send a sealed official transcript directly to the Registrar's Office.
- Have their advisor sign the form, then submit the syllabi and form to the Office of Graduate Student Services (OGSS) for the Graduate Program Director's (GPD) review and approval. Once approved, the form will be sent to the Office of Graduate Education (OGE) for processing.

1.3.5 Registering for Thesis, Dissertation, or Project Credits:

Depending on the student's degree program, graduate students will register for thesis, dissertation, or project credits. The number of credits they register for each semester may vary, as long as they complete the minimum required to finish their degree in time. In order to register for these credits, students must visit the [Student Information System \(SIS\) website](#) and register for either **Master's Thesis (MANE 6990)**, **Master's Project (MANE 6980)** or **(MANE 6970 for GRADUATE PROGRAM FOR WORKING PROFESSIONALS students)**, or **Dissertation (MANE 9990)**, under the name of their graduate advisor. For issues regarding registering for courses on SIS, students must contact the [Registrar](#).

Please note that when registering for thesis, dissertation, or project credits on (SIS) website, students will need to specify the number of credits in the drop-down menu that they intend to register for, since the default number shown is one credit hour.

1.3.6 Registering for a Graduate Independent Study:

When a graduate student chooses to do an Independent Study (**MANE 4940 or 6940**), they must complete a [Readings / Independent Study Registration Form](#).

Please note the following:

- The Independent Study must be completed with a faculty member **other** than the student's graduate advisor.
- No more than 3 credits of Independent Study may be used towards a graduate degree.
- This form is not to be used for late registration / late adding course. It must be submitted to the Office of Graduate Student Services (OGSS) before each semester's deadline to add a course, as shown on the [Academic Calendar](#).

1.3.7 Summer Administrative Registration:

Summer Administrative Registration (SAR) is a registration requirement for graduate students who will be receiving a stipend over the summer or graduating in the summer semester. Students taking credit-bearing courses or research credits should not register for SAR.

Students must register for ADMN-6600 (SAR) by the registration deadline if they intend to stay at Rensselaer for graduate study during summer.

1.3.8 **MANE Lab Safety Course:**

Mechanical, Aerospace & Nuclear Engineering (MANE) graduate students are required to complete multiple requirements within our safety program. The Dean of SOE requires that anyone doing any lab/shop work has to take a quiz produced by SOE and listed as a “course” on LMS as 1701_ENGR_Lab_Safety. This quiz is straight forward and short, including a video and an on-line quiz. The students can take the quiz as often as they need to but must receive a score of 100% in order to be compliant. This is a recurring requirement, meaning that if you are a Grad that works in the labs at RPI for 2 years then you will have to take the SOE quiz at the start of every semester during those 2 years. If you are a URP student that works on-and-off five times in 4 years then you will take the quiz 5 times; once at the beginning of each semester in which you are actively employed in a lab. If you have completed the 13 Video series of MANE safety training in the past at any time, then you can skip this paragraph as you are already in compliance with this portion of the safety requirements. The Head of MANE has decreed that anyone doing any lab work within our department must complete a series of 13 videos with related quizzes that are listed as a “course” on LMS as 1701_MANE Safety Program. This program was created by EH&S in conjunction with MANE and is meant to cover most safety issues that may be found in any of our lab spaces. This process is approximately a 4.5-hour time commitment. You can take the quizzes as often as you need to but you must receive a score of 100% on all 13 in order to be compliant. This is a onetime requirement, meaning once you have completed the program you are cleared to work in any MANE lab or shop for the duration of your time here. Please save a screen shot of your grades for future reference.

Please go to <https://lms9.rpi.edu>. Log in using your RPI username and password. For access to the SOE quiz you must select 1701_ENGR Lab Safety. Select 1701_MANE Safety Program for access to the 13 videos and quizzes required for MANE.

Please complete these quizzes before you begin your work.

1.3.9 **Department Seminars:**

All graduate students except for co-terminal students are required to register each semester for **Graduate Seminar MANE 6900** and meet all requirements. Announcements are sent to students each week to inform them of upcoming seminars.

1.3.10 **Responsible Conduct of Research Training:**

All students who are supported on National Science Foundation funds must complete the **Responsible Conduct of Research Training** prior to receiving support. This training is offered by CITI for RPI. Additional information on the training can be found at: <http://rpi.edu/research/office/rcr.html>. Furthermore, all PhD students are required to complete the training prior to their Candidacy Exam.

A copy of the certificate of completion of the training must be included with the [Record of Candidacy Exam form](#).

1.3.11 **Graduate Change of Status:**

The [Graduate Change of Status form](#) is used to change curriculum or degree program, add an additional master’s degree program, change campuses, return to active status, or withdraw from a program. The form is to be completed and signed by the student and advisor (both current and new advisors, if changing curriculum), then submitted to Office of Graduate Student Services (OGSS) for the Graduate Program Director (GPD)’s review. **A current or updated Plan of Study (2.2.2) must be submitted with the Change of Status form.**

A change from one curriculum to another or adding an additional degree program is treated as an admissions decision. It is the responsibility of the student to supply the (new) department with required credentials. The new department may require a student to file a full application for the degree through the [Graduate Admissions Office](#).

This form may not be used by non-matriculated graduate students seeking admission as matriculated students and for master's students applying to a PhD program.

1.3.12 Satisfactory Academic Progress:

To remain eligible for graduation, a graduate student must:

- Maintain a GPA of 3.0 or greater each semester.
- Courses with a grade of “D” or below are not eligible to be counted towards a graduate degree. Receiving two “F” grades may trigger dismissal from the graduate program.
- Incompletes (“I” grades) must be completed within one semester and the work required to fulfill the course requirement is determined by the advisor. An “I” grade will be counted as an “F” if the work is not completed in time.
- Receive an “S” in Research (dissertation, thesis, or project credits).
- Have an approved [Graduate Plan of Study \(GPS\)](#) on file no later than the end of the second semester.
- Co-terminal students must ensure that they have an updated Plan of Study on file with the Office of Graduate Education (OGE) for **each** semester of graduate study.
- The Plan of Study may be adjusted each semester as necessary.
- Must be on track to fulfill the requirements of their degrees on time.

Eligibility for current and future financial support is contingent on satisfactory academic progress.

For more detailed information on The Federal Satisfactory Academic Progress regulations, visit: <https://admissions.rpi.edu/aid/sap>.

1.3.13 Enforcement:

If a student is not in compliance with the Institute requirements, he/she will be subject to receiving a warning from the OGSS. The student will have one semester to make satisfactory arrangements (in consultation with the GPD and the student's advisor) to come back into compliance. If these arrangements are not made, then the student will be prevented from registering the following semester and may be subject to losing graduate student status.

Students with a GPA below 3.0 for any term of graduate study will be placed on probation by OGE and must come back into compliance by the end of the following semester.

1.3.14 Intellectual Property:

Rensselaer has devised The Rensselaer Intellectual Property Policy to benefit the public by encouraging and enabling technology development and transfer. The Rensselaer community is inherently creative, and Rensselaer's physical and intellectual resources enhance the creativity of members of that community. This policy reflects, in part, Rensselaer's contribution to that creativity. It encourages creators to innovate by guaranteeing them a share in the benefits resulting from the Intellectual Property that they develop. At the same time, it also promotes research and education activities at Rensselaer by allowing Rensselaer to retain a share of the benefits flowing from Intellectual Property developed under its auspices.

There are numerous types of Intellectual Property, and a distinct body of law applies to each one. The primary categories of Intellectual Property are patent, copyright, trademark, and integrated circuit mask work protection, though from time-to-time other types of protection and other bodies of law may also fall under the broad heading of Intellectual Property. Intellectual Property rights govern the ownership, licensing, distribution, and commercialization of Intellectual Property.

For more detailed information on The Rensselaer Intellectual Property Policy, visit:

https://research.rpi.edu/sites/default/files/TheRensselaerIntellectualPropertyPolicy_0.pdf.

1.3.15 Rensselaer Travel Reimbursement and Purchasing Policies and Procedures:

Graduate students who are planning Institute-related travel usually arrange to be sponsored and/or reimbursed through their advisors. To facilitate this process, students should sign up for Concur, the Institute's on-line travel service. To register for Concur, students will need a fund number and their graduate advisor's signature on the "Concur Authorization Form For Rensselaer Students", which is available online at:

<http://finance.rpi.edu/update.do?catcenterkey=198>

Once students are registered, they are enrolled in the travel service program (somewhat like Expedia and other travel services) and they are also connected to Rensselaer's travel agency, Direct Travel, which uses a Rensselaer credit card to pay for airfare, train fare, hotels, rental cars and many other registration fees. Students may need to contact the agency by phone for some services. Students are strongly encouraged to use Direct Travel if they are planning any trip to a foreign country. Students can also rent cars from Enterprise / National through Concur and Rensselaer will cover the expense, as long as the student's advisor has approved the travel. Students should be aware of the following when registering for Concur:

1. The student's advisor must approve the travel arrangements within 24 hours via email, or they will be cancelled.
2. Students must complete an expense report in Concur to verify their travel expenses and attach receipts in the program within 30 days after they return from a trip. For assistance, there are several programs available online and students can also contact Amy Edmans at edmana2@rpi.edu with any questions they may have.
3. Passwords expire every 2 months.
4. To facilitate the registration process, students should type the registration form rather than write the information by hand.

For most current details on Institute-related travel, students should refer to the [complete Travel Reimbursement Policy](#) available online.

Students who have been asked to procure supplies for a lab or for experiments should contact either Esther Rendano (rendae@rpi.edu) or Jan Lajeunesse (lajeuj@rpi.edu). Esther and Jan can provide students with forms which include the information that the MANE Department requires for the order as well as a place for the student's advisor to list the fund number to use and the advisor's approval signature.

If students are planning to order a large number of different items from vendors, they may want access to the "Shop Only" option on Rensselaer's purchasing system (OSCAR) so that they can set up shopping carts to be processed by Esther or Jan.

Students purchasing items for under \$35 are expected to use petty cash and will still require that the student have access to Concur, since that is the system used by Rensselaer to reimburse expenses.

For any questions regarding purchasing, travel, and expenses, students may contact Amy Edman, MANE's Business Administrator, at edmana2@rpi.edu.

1.3.16 Academic Integrity:

Intellectual integrity is critical to the foundation of all academic work. Academic dishonesty, therefore, is considered a serious matter and will be addressed as such.

As defined in the current Rensselaer Handbook of Student Rights and Responsibilities, examples of academic dishonesty include, but are not limited to: **academic fraud, collaboration, copying, cribbing, fabrication, plagiarism, sabotage, and substitution**. Specific examples include acts such as: copying sections verbatim from a previously published article into a thesis without appropriate referencing, tampering with an instructor's grade book, or falsifying lab records or reports. Additionally, attempts to commit academic dishonesty, or to assist in the commission or attempt of such an act, are also violations of the academic dishonesty policy.

If a student is found in violation of the academic dishonesty policy, they may be subject to two types of penalties. The instructor administers an academic (grade) penalty, and the student may also enter the Institute judicial process and be subject to such additional sanctions as: warning, probation, suspension, expulsion, and alternative actions as defined in the current Handbook of Student Rights and Responsibilities.

Graduate students in MANE are expected to be aware of Rensselaer's policy and of their discipline's ethical code and act accordingly. Failure to comply with these codes is grounds for dismissal from a graduate program. Since adherence to the policy is so crucial, it is strongly recommended that students view (and retain) a copy of the full **Academic Integrity Policy**, which can be found online at <http://doso.rpi.edu/update.do?artcenterkey=676>.

1.3.17 Rensselaer Handbook of Student Rights & Responsibilities:

All graduate students at Rensselaer are expected to own a copy of the [Rensselaer Handbook of Student Rights & Responsibilities](#) which details regulations governing student conduct. These policies are intended to help maintain an atmosphere conducive to learning and personal growth and to make the process of education positive and successful for all members of the community. Graduate students should also obtain a copy of the [Graduate Student Supplement to the Handbook](#), which sets guidelines specifically applied to graduate students and graduate education.

Doctoral Degree in Mechanical, Aerospace & Nuclear Engineering

2.1 Doctoral Program:

The Doctor of Philosophy (PhD) degree represents the culmination of a significant amount of work, creativity, and perseverance by the student. The degree is earned once the student's graduate advisor and doctoral committee agree that the student has demonstrated independent thought and research, made original contributions to the fundamental knowledge in a given field, and has produced a substantial body of information in the form of a dissertation. The dissertation documents the student's research and is expected to be a scholarly work.

To earn a PhD degree in MANE, both Institute and department requirements must be met. Both full-time and part-time students must adhere to these requirements. Students admitted through the **BS-PhD program** must also adhere to these requirements.

In addition to these requirements, students should be familiar with the information in the [Rensselaer Catalog](#) and the [Institute Graduate Tuition Policy](#) in order to plan their PhD degrees appropriately.

2.2 Institute Requirements:

The Institute Requirements to complete the PhD degree are as follows:

- Must complete seventy-two (72) credit hours past the B.S. degree, or complete forty-eight (48) credit hours past a Master's degree earned elsewhere. This is a residency requirement. **Further details on this requirement can be found in section 2.4.**
- The minimum average of all grades used for credit toward an advanced degree must be B (3.0). The student will not be eligible to receive their degree if their cumulative GPA is below 3.0 when they apply to graduate.
 - Incompletes ("I" grades) must be completed within one semester and the work required to fulfill the course requirements is determined by the advisor. An "I" grade will be counted as an "F" if the work is not completed in time.
 - Courses with a grade of "D" or below are not eligible to be counted towards a graduate degree.
 - Receiving two "F" grades may trigger dismissal from the graduate program.
 - The Pass/No Credit option cannot be used for courses applied toward a graduate degree.
- A minimum of 2/3 of the total course credits listed in the Plan of Study must be at the 6000-6999 level. (Of the minimum 36 course-work credits required, at least 24 credits must be completed at the 6000-6999 level; not including thesis. MANE-9990 Dissertation credit is NOT considered course-work credit.
- Present an independent thesis that demonstrates creativity, originality, and scholarly writing.

- Acquire a graduate advisor, form a [Doctoral Committee](#), submit a [Graduate Plan of Study](#) (GPS) pass a [Candidacy Exam](#), and defend the thesis.
- Full-time students must complete all the above requirements within three (3) calendar years of passing the candidacy exam and within seven (7) years of beginning PhD studies.
- Students entering with a master's degree in their prospective or closely related field of study must finish all degree requirements for the PhD within five (5) years.
- Must be registered each term and complete all requirements on the [PhD Degree Checklist](#) to obtain their degree.
- File a Degree Application with the Registrar's Office by the date specified in the Institute's [Academic Calendar](#) for the semester in which the student plans to graduate. **If a degree application was filed the previous semester but the requirements were not fulfilled, a new degree application must be filed for the semester in which the student will actually graduate.**
- Submit signed and completed Record of Dissertation Exam, Survey of Earned Doctorates, and Graduate Student Exit Survey forms to the Office of Graduate Education (OGE) prior to submitting the dissertation electronically. These forms can be found on the [PhD Degree Checklist](#).
- Submit an electronic copy of the dissertation via UMI/ProQuest's ETD Administrator website in PDF format. The dissertation submitted must already have been approved by the student's Committee. Students will need to use a credit or debit card to pay a fee as part of the UMI ETD Administrator submission process. This fee covers the cost of UMI/ProQuest supplying a bound paper copy of the dissertation to the Rensselaer Libraries for preservation. Please note that students may file for copyright registration via UMI/ProQuest for an additional fee.

2.2.1 **Transfer Students:**

If a student transfers from another doctoral program at RPI, he/she still must adhere to the above requirements. According to the Institute residency requirements, up to twenty-four (24) credit hours of prior graduate study can be applied toward the seventy-two (72) credit hours required for the PhD degree. Often these twenty-four (24) credit hours include credit hours for a master's degree at a different university.

Students must use a [Transfer Credit Approval Form](#) for approval of transfer courses.

2.3 **Steps to Complete a PhD in Mechanical, Aerospace & Nuclear Engineering (MANE)**

1. Choose a graduate advisor, preferably by the end of the 1st semester, no later than the beginning of the 2nd semester.
2. File a [Graduate Plan of Study](#) that fulfills the curriculum requirements before the end of the 2nd semester. The Plan of Study may be adjusted each semester as needed.
3. Take the oral Doctoral Qualifying Exam (DQE) one semester after completing Master Degree or equivalent course credits (entering with a bachelor's degree) or one semester after admission (entering with a master's degree).
4. Form a Doctoral Committee.
5. Submit a [Nomination of Doctoral Committee Form](#) which must be received and approved prior to taking the Candidacy Exam.
6. Take the [Candidacy Exam](#) within two years of passing the DQE.
7. Complete all required course-work.
8. Successfully complete research and write a dissertation.
9. Defend the thesis no less than one year after passing the Candidacy Exam.

10. Submit dissertation to OGE for final approval.

11. Complete PhD checklist.

2.3.1 Choose a Graduate Advisor (end of 1st semester, no later than beginning of 2nd semester):

The graduate advisor will guide the student in all aspects of his/her academic and research programs. They are usually from the MANE department. But, a student can choose to work with a faculty member from a different department. If a student has an advisor from another department, then a doctoral committee co-chair from within the MANE department is required.

2.3.2 File a Graduate Plan of Study (before the end of the 2nd semester):

A Graduate Plan of Study (GPS) form is created by the student and advisor and lists all the courses and dissertation credits used to complete the PhD degree requirements. Once it is prepared it must be submitted to the Graduate Program Director (GPD) for review and signature. Courses listed on the Plan of Study (to be counted toward the graduate degree) are determined by the needs of the student's research with the guidance of the graduate advisor.

The Plan of Study is preferably submitted by the start of the second semester in the PhD program, but must be submitted before the end of the 2nd semester after being admitted for PhD study. A revised Plan of Study is required when courses listed on the original are not offered or more appropriate courses need to be completed instead. **Please note that Graduate Seminars should not be included on the Plan of Study form.**

2.3.4 Doctoral Qualifying Exam (after Master Degree or Equivalent Course Credits):

After admission to the doctoral program, students must pass an oral Doctoral Qualifying Exam (DQE) to be advanced to doctoral student status. The purpose of the DQE is to evaluate the intangible factors essential for a successful PhD that coursework does not necessarily show. Each student will be questioned to determine his/her capability to think, synthesize information, speculate based on background knowledge, demonstrate more than textbook problem solving skills, and convey thoughts and ideas clearly to others. In order to be adequately prepared for the exam, students should maintain a GPA of 3.3 and above, and ensure that they have sufficient background in their subject area(s) beforehand. No more than one full semester beyond the completion of the Master Degree or equivalent course credits may pass before taking the DQE. This applies to both full-time and part-time students. If necessary, the student may request that the DQE be deferred. In this case, the student's advisor must contact the Office of Graduate Student Services (OGSS) to discuss this request.

The exam will be administered at the beginning of the fall and spring semesters during the first two weeks of classes. Three faculty members (graduate advisor is included) will question a student for approximately one hour in two areas, primary and secondary, of the student's choice from a list of areas. Relevant applied mathematics questions will be included. The areas to choose from are:

- Controls
- Fluid Mechanics
- Heat Transfer & Thermodynamics
- Flight Mechanics & Aerodynamics
- Design
- Engineering Computation
- Dynamics
- Nuclear Radiation Interaction
- Manufacturing
- Reactor Engineering & Physics
- Solid Mechanics
- Helicopters.

Sample questions and information about potential topics are available in the MANE Office of Graduate Student Services (OGSS). Students will be notified of the examiners at least ten weeks before the exam. Prior to the exam, students are encouraged to meet with examining committee members to discuss appropriate subjects on which they may be quizzed. Questions will be at the first-year-graduate-student level.

After all the DQEs have been given for a semester, examiners will meet to discuss the results and determine the outcome. Students will be notified shortly thereafter.

Please note that inability to answer a question due to language difficulties may be treated as an inability to answer due to technical deficiencies.

The possible outcomes of the DQE are:

- The student receives an unconditional pass.
- The student receives a conditional pass and upon completion of the condition, the student will be advanced to doctoral student status (e.g., taking a specific course or courses).
- The student fails one or both areas, but is allowed to retake the exam one more time (no more than one re-take will be allowed).
- The student fails and must leave the PhD program (in this case, the student may choose to obtain a master's degree instead, if the student does not already have a master's degree from RPI, provided the performance is at a satisfactory level for a master's degree).

2.3.4 Forming a Doctoral Committee (by end of 3rd semester after Master's Degree or equivalent course credits):

The committee members are chosen through consultations between the student and his or her graduate advisor. The committee is composed of:

- A minimum of four full-time tenure-track faculty (graduate advisor is the committee chair plus three other members).
- At least three MANE department faculty members (advisor from the program faculty and an additional two members from the program faculty).
- One member must be from outside the department.
- Members from outside the Institute are acceptable if approved by the Graduate Program Director (GPD) and the Office of Graduate Education (OGE); these members would be in addition to the four full-time tenure-track faculty.

Doctoral students must submit a [Nomination of Doctoral Committee Form](#) for approval from the Department and OGE prior to taking the Candidacy Exam.

2.3.5 Taking the Candidacy (within 2 years after passing DQE):

The candidacy exam is focused on the student's doctoral dissertation research proposal. The student will present his/her proposal in writing, in sufficient detail, before the exam (so the committee can study it) and orally during the exam, so that the doctoral committee can assess their progress, goals, future research plans, and investigation rigor.

Basic Guidelines:

- The text of the written research proposal (not including subsequent figures, tables, and reference sections) may not exceed 15 single-spaced pages.
- During the oral exam, the student must be able to respond well in English against potentially rigorous questioning.

- In addition to assessing passage of the exam, the committee can recommend alternative approaches, suggest modifications to goals and tasks, require additional courses, or provide other guidance.
- The candidacy exam is taken within two years of passing the DQE.
- Students are expected to pass the candidacy exam at least one year prior to the subsequent dissertation defense.

Students seeking to meet Candidacy requirements must submit a [Record of Candidacy Form](#) and [CITI Program Completion Certificate](#) when they have passed the Candidacy Exam. Instructions for completing the CITI program requirements are found on page 2 of the form.

2.3.6 Defending the Thesis (at least 1 year after Candidacy Exam):

The student must prepare a written dissertation and present a public seminar defending the thesis before the doctoral committee. After the public session is over, the doctoral committee will further examine and discuss the dissertation with the student in private. The committee can accept, reject, or ask for changes in the dissertation.

The defense is scheduled when the student and the graduate advisor agree that it is time, but must be done within **seven years of being admitted for PhD study, or within five years if entering with a master's degree**. Furthermore, it is suggested that the student have a minimum of at least one journal paper on the thesis topic accepted for publication prior to the defense.

2.3.7 Submitting a Dissertation:

Doctoral candidates must submit a copy of the dissertation in its final form along with a copy of the abstract to the graduate advisor at least one month before the end of the term in which it is expected that the degree will be awarded. The student must furnish each doctoral committee member with an individual copy of the dissertation and the abstract at least one week before the dissertation defense. For due dates specific to the intended semester of graduation, check the [Academic Calendar](#).

Bring the following items to Office of Graduate Education (OGE) in paper form no later than the published submission due date in the Academic Calendar (these items are separate from, but in addition to, the electronic submission of your dissertation).

- The [Record of Dissertation Exam Form](#) with the original signatures of the advisor and committee.
- The Graduate Student [Exit Survey](#), available on the OGE website.
- [Survey of Earned Doctorates \(SED\)](#) certificate of completion.
- Complete the [Future Plans Survey](#) located on the Center for Career and Professional Development website.
- Complete the Destination Survey sent to all graduating students by OGSS.

It is strongly suggested that students visit the Office of Graduate Student Services (OGSS) to review their dissertations in advance. It is also suggested that students complete the [Dissertation Checklist](#) to ensure that they have submitted all paper work and that they have completed all degree requirements before submitting the dissertation. For more details, visit the [“Submitting Your Thesis”](#) page on the [Office of Graduate Education \(OGE\)website](#).

2.3.8 Electronic Submission:

Students must bring the approved [Record of Dissertation / Thesis Exam Form](#) and the supporting paperwork to the OGE **before** submitting the dissertation to UMI ETD Administrator for review.

Instructions:

When the student is ready to submit, they will go to the [UMI ETD Administrator website](#) and click “Submit my dissertation / thesis” and then “Create an Account.” After they have created their account, they will receive an email to activate their account. After the account is activated, they can begin the submission process by logging in to the UMI ETD Administrator website.

The websites of both the OGE and the [Libraries](#) also contain a link to UMI ETD Administrator. If students have questions about the UMI ETD Administrator submission process, they should contact ETD Support.

For detailed information on dissertation format requirements and electronic submission, read the [Preparation Guide for Dissertations and Thesis](#) found on the OGE website.

2.4 Mechanical, Aerospace & Nuclear Engineering (MANE) Department Curriculum Requirements for PhD

2.4.1 PhD Students Admitted with a Bachelor’s Degree and BS-PhD Students:

Doctoral students admitted to the program with a bachelor’s degree are expected to complete degree requirements as follows:

Minimum Required Number of Course Work Credits: 36

Minimum Required Total Number of Credits: 72

Of the minimum required 36 credits of course work:

- All courses used to earn the PhD degree must be taken at the 4000 or 6000-7999 level.
- A minimum of 2/3 of the total course credits listed in the Plan of Study must be at the 6000-6999 level. (Of the minimum 36 course-work credits required, at least 24 credits must be completed at the 6000-6999 level, not including thesis. MANE-9990 Dissertation is not considered course work credit.)
- If a student uses more than 36 course credits on their plan of study, the 2/3 rule described above, applies.
- No more than 1/3 of course credits can be applied at the 4000-level. This includes applying a MATH course at the 4000-level.
- At least half of course credits applied must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- No more than 18 credits of course work from programs outside of MANE are accepted, including a MATH course.
- Credits from departments outside of the School of Engineering or School of Science require prior approval from the Graduate Program Director before counting them towards a graduate degree.
- The course requirements for a Master’s degree must be completed first. Refer to Master’s Degrees in Chap. 3.
- External courses must be of a technical nature from programs within the [School of Science](#) or [School of Engineering](#).
- A minimum of 48 credits must be earned at Rensselaer with satisfactory grades to meet residency requirements.

- One (1) 4000 or 6000-level MATH or MATP course is required. Please note that this requirement does not apply to students admitted to the program prior to the Spring 2014 semester.
- Up to 3 credits of an [Individual Project / Independent Study](#) course may be used. Individual Project / Independent Study credits must be completed with a faculty member other than the student's graduate advisor.
- Courses required for the completion of a bachelor's degree in Mechanical, Aerospace, or Nuclear Engineering are not eligible to be applied to a graduate degree in the same program.
- Must register for MANE 6900 Graduate Seminar each semester and attend the required number of seminars.
- Must meet [Institute requirements from Rensselaer Course Catalog](#).

2.4.2 PhD Students Admitted with a Master's Degree:

Master's degrees awarded outside of Rensselaer Polytechnic Institute represent 24 credits of course work and are applied to the 72 credits required for the doctoral degree. Students admitted to the program with a master's degree will have already completed the first 24 credits of the total 36 credits of required course work at their previous graduate institution, leaving only 12 credits of course work remaining.

Doctoral students admitted to the program with a master's degree are expected to complete degree requirements as follows:

Minimum Required Number of Course Work Credits: 12

Minimum Required Total Number of Credits: 48

Of the required 12 credits of course work:

- All courses used to earn the PhD degree must be taken at the 4000 or 6000-6999 level.
- No more than 1/3 of course credits at the 4000-level can be applied.
- A minimum of 2/3 of the total course credits listed in the Plan of Study must be at the 6000-6999 level. MANE-9990 Dissertation is not considered course work credit.
- **IF** a student uses more than 12 course-work credits on their Plan of Study, after the MS degree, the 2/3 rule for 6000-6999 level graduate course requirements must also be satisfied.
- At least half of course credits applied must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- No more than 6 credits of course work from programs outside of MANE are accepted.
- External courses must be of a technical nature from programs within the [School of Science](#) or [School of Engineering](#).
- Credits from departments outside of the schools of Engineering or Science require prior approval from the Graduate Program Director before counting them towards a graduate degree.
- Up to 3 credits of an [Individual Project / Independent Study](#) course may be used. **Individual Project / Independent Study credits must be completed with another faculty member rather than the student's graduate advisor.**

- Courses required for the completion of a bachelor's degree in Mechanical, Aerospace, or Nuclear Engineering are not eligible to be applied to a graduate degree in the same program.
- Must register for MANE 6900 Graduate Seminar each semester and attend the required number of seminars.
- Must meet [Institute requirements from Rensselaer Course Catalog](#).

2.5 Doctoral Student Evaluations

2.5.1 TA Evaluations:

Teaching Assistants will be evaluated based on feedback from the undergraduate students who were in a class where the student served as the TA as well as the course instructor for this class. Additionally, the graduate student is asked to provide feedback on their assignment and asked to report how many hours per week was spent on the TA assignment as the department seeks to evenly distribute the load of the TA assignments among the students serving as a TA.

2.2.1 Doctoral Student Yearly Review (DSYR):

These reviews are conducted annually for all doctoral students. Students will meet with their advisors to review progress in research and coursework mid-semester in the spring of every year of graduate study. At this time, students and their advisors will complete a Doctoral Student Yearly Review form which will be submitted to the Office of Graduate Student Services (OGSS) for review and approval. The form will then be sent to the Office of Graduate Education (OGE) where it will be kept on record to evaluate progress through the course of the degree.

Master's Degrees

Both **Master of Science (MS)** and **Master of Engineering (MEng)** degrees are offered in Mechanical, Aerospace & Nuclear Engineering (MANE). Detailed information about specific requirements for each degree is presented in this section.

The **MS degree** is perceived to be scholarly and fundamental and is well suited to students who wish to prepare for a professional career and also to measure their ability to pursue a PhD without commitment of extra time beyond that required for an MS.

Students completing the MS degree will write a thesis based on a research topic chosen by the student and a professor who serves as the advisor. The topic is chosen based on mutual interests and needs. Course work is typically focused on subjects related to the research topic. The corresponding thesis, independently written by the student as a single author, must be approved by the advisor as well as two additional committee members from the department's faculty. A thesis defense will be presented to this committee.

The **MEng degree** is intended to be more applied and practically oriented in comparison to the MS degree. Students in the MEng program will complete a research project chosen by the student and a professor who serves as the student's academic advisor. Course work typically focuses on subjects related to the research project topic.

Students in the Co-Terminal Program should refer to [Chapter 4](#) for more information on their requirements as co-terminal master's students.

***The EDUCATION FOR WORKING PROFESSIONALS master's degree requirements differ from the traditional master's degrees outlined in this chapter. EDUCATION FOR WORKING PROFESSIONALS students should refer to [Chapter 5](#) for details on the requirements of their degree.**

3.1 Institute Requirements

The [Institute Requirements to complete a Master's degree](#) are as follows:

- The minimum average of all grades used for credit toward an advanced degree must be B (3.0). The student will not be eligible to receive their degree if their cumulative GPA is below 3.0 when they apply to graduate.
 - Incompletes ("I" grades) must be completed within one semester and the work required to fulfill the course requirements is determined by the advisor. An "I" grade will be counted as an "F" if the work is not completed in time.
 - Courses with a grade of "D" or below are not eligible to be counted towards a graduate degree.
 - Receiving two "F" grades may trigger dismissal from the graduate program.
 - The Pass / No Credit option cannot be used for courses applied towards a graduate degree.
- Submit a [Graduate Plan of Study \(GPS\)](#) before the end of the second semester. To graduate, the courses students have taken must agree with the GPS. They can file a revised GPS to ensure agreement.
- At least half the total credit hours presented toward the degree must have the suffix numbers 6000-6999.

- File a degree application with the [Registrar's Office](#) by the date specified in the academic calendar for the semester in which a student plans to graduate.
- Must be registered each term and complete all requirements of the [Master's Degree Checklist](#) to obtain their degree.
- Full-time students must meet all of the above requirements within two-and-a-half (2.5) years and three-and-a-half (3.5) years for part-time students.

Please note that when registering for thesis, dissertation, or project credits on (SIS) website, students will need to specify the number of credits that they intend to register for, since the default number shown is one credit hour.

In addition to these requirements, students should be familiar with the information in the [Rensselaer Catalog](#) and the [Institute Graduate Tuition Policy](#) in order to plan out master's study appropriately.

3.2 Master of Science (in general, more scholarly and fundamental)

3.2.1 Steps to Complete a Master of Science (MS) Degree in Mechanical, Aerospace & Nuclear Engineering (MANE):

Students must follow these steps for completing an MS degree:

- Find a graduate advisor.
- File a [Plan of Study](#) form before the end of the second semester in the program.
- Form an MS committee (three full-time tenure-track faculty members, all of whom must be from the MANE department) with approval from Office of Graduate Education (OGE) before the end of the second term).
- Submit a [Nomination of Master's Committee Form](#) which must be received by the deadline specified on the [Academic Calendar](#) for that semester.
- Successfully complete research and write a thesis.
- Submit the thesis to MS committee at least one week prior to the presentation.
- Successfully complete the [thesis presentation](#) as judged by the MS committee.
- Submit completed thesis electronically for final approval.
- Complete all required coursework on the Plan of Study.

3.2.2 Master of Science Course Work Requirements:

Minimum Required Number of Course Credits: 24

Minimum Required Master's Thesis Credits: 6

Minimum Required Total Number of Credits: 30

- **All courses used to earn the master's degree must be taken at the 4000 or 6000-level.**
- Out of the 24 credits of course work: a minimum of 12 credits must be completed at the 6000-6999 level.
- At least half the total credit hours presented toward the degree must have the suffix numbers 6000-6999. It is

recommended that a prospective PhD student complete 2/3 of their coursework at the 6000-6999 level.

- A minimum of 15 course credits must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- One (1) 4000 – 6000 level MATH or MATP course is required. **See appendix 16.**
- No more than 15 credits of courses from outside of MANE (including the MATH course) may be counted towards the degree. These courses are limited to 9 credits of Engineering or Science courses of a technical nature, and 6 credits of coursework from outside of School of Engineering or Science.
- Credits from departments outside of the Schools of [Engineering](#) or [Science](#) require prior approval from the Graduate Program Director before counting them towards an MS degree.
- Courses required for the completion of a bachelor's degree in Mechanical, Aerospace, or Nuclear Engineering (MANE) are not eligible to be counted towards a graduate degree in the same program.
- A maximum of 3 credits of [Individual Project/Independent Study](#) are accepted. **Note: Individual Project / Independent Study credits must be completed with a faculty member other than the student's graduate advisor.**
- Each full-time student must register each semester for Graduate Seminar MANE-6900 and attend the required number of seminars. **This requirement does not apply to co-terminal students.**

3.2.3 Master of Science (MS) Thesis Committee:

The student's graduate advisor serves as the chair of the student's thesis committee. Thesis committees for students seeking an MS degree consist of three members, who must be primary or joint tenure-track faculty in MANE. It is possible to have more than three members in the committee, where no restrictions on the affiliation apply to the additional members.

If a committee member is not a faculty member at RPI, the student must submit a CV and rationale for why their participation is beneficial to the MS student to the Graduate Program Director (GPD). Students must complete a [Nomination of Master's Committee form](#), obtain all necessary signatures, and submit to the MANE department for the GPD's approval. This form is forwarded to the Office of Graduate Education (OGE) for consideration and the student will receive confirmation of the committee from OGE.

The deadline to submit this form is specified in the [Academic Calendar](#) for each semester.

3.2.4 Master of Science Thesis and Presentation:

A thesis, independently written by the student as single author, must be approved by the advisor as well as two additional committee members from the department's faculty (thesis committee). Students will be required to present their work to this committee. This requirement may be fulfilled using one of three methods (outlined in section [3.2.4.1](#)).

The MS thesis is expected to be original work contributing to the scientific community at large. Students should review the [Preparation Guide for Dissertations and Thesis](#) for more information detailing MS thesis format.

The thesis must be submitted to the committee at least one week prior to the presentation. At the end of the presentation, the student, graduate advisor, and committee members must complete a [Record of Thesis and Oral Presentation form](#), to be submitted to OGE.

3.2.4.1 Methods of Completing the Master of Science (MS) Presentation:

There are three different methods used to complete the MS presentation requirement (with approval from the graduate advisor).

Program or Institute Seminar:

A presentation announcement must be posted publically within the department (electronic or paper copy) at least one week prior to the date of the presentation. A copy of the announcement must be included when the student submits the [Record of Master's Thesis & Oral Presentation](#) form to the Office of Graduate Education (OGE).

Presentation:

A presentation given at a conference or symposium is another method of satisfying the MS thesis presentation requirement. A copy of the schedule / announcement must be included when students submit the Record of Master's Thesis Presentation form to OGE.

Thesis Defense:

The entire committee is required to be present. The date, time, and location are pre-arranged by the student and committee.

3.2.5 Submitting the Thesis:

Master's candidates must submit their thesis to the advisor and advisory committee for review **at least one week before the final copy is due in the OGE**. For deadlines, students should refer to the [Academic Calendar](#).

The following items must be submitted to OGE in paper form, no later than the published submission due date in the Academic Calendar (these items are separate from, but in addition to, the [electronic submission](#) of your thesis).

- The Record of Master's Thesis Presentation Form with the original signatures of the advisor and committee.
- The Graduate Student [Exit Survey](#), available on the OGE website.
- Complete the [Future Plans Survey](#).
- Complete the Destination Survey sent to all graduating students by OGSS.

It is strongly suggested that students complete the [Master's Checklist](#) to ensure that students have submitted all paperwork and that they have completed all degree requirements before submitting their thesis. For more details, visit the ["Submitting Your Thesis"](#) page on the [OGE website](#).

Deadlines for the presentation and thesis submission are posted on the OGE website as well as the Academic Calendar each semester.

3.2.6 Electronic Submission:

Students must bring the approved [Record of Master's Thesis & Oral Presentation](#) and the supporting paperwork to the OGE **before** submitting the thesis to UMI ETD Administrator for review.

Instructions:

When the student is ready to submit, they will go to the [UMI ETD Administrator website](#) and click "Submit my dissertation/thesis" and then "Create an Account." After they have created their account, they will receive an email to activate their account. After the account is activated, they can begin the submission process by logging in to the UMI ETD Administrator website.

The websites of both the OGE and the Libraries also contain a link to UMI ETD Administrator. If students have questions about the UMI ETD Administrator submission process, they should contact ETD Support.

For detailed information on dissertation format requirements and electronic submission, read the Preparation Guide for Dissertations and Thesis found on the [Office of Graduate Education](#) (OGE) website.

3.3 Master of Engineering (MEng) (in general, more applied and practical)

3.3.1 Steps to Complete a MEng Degree in Mechanical, Aerospace & Nuclear Engineering (MANE):

Students must follow these steps for completing a MEng degree:

- **Find a graduate advisor.**
- **Complete a Graduate Plan of Study before the end of the second semester in the program (at the beginning of the first semester for co-terminal students).**
- **Participate in the MEng graduate poster presentation at the end of the final semester.**
- **Complete all required coursework on Plan of Study.**

3.3.2 Master of Engineering Course Work Requirements:

Minimum Required Number of Course Credits: 24

Minimum Required Master's Project Credits: 6

Minimum Required Total Number of Credits: 30

- All courses used to earn the master's degree must be taken at the 4000 or 6000-6999 level.
- Out of the 24 credits of course work: a minimum of 12 credits must be completed at the 6000-6999 level.
- At least **half the total credit hours** presented toward the degree must have the suffix numbers 6000-6999. It is recommended that a prospective PhD student complete 2/3 of their coursework at the 6000 level.
- A minimum of 15 course credits must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- One (1) 4000-6000 level MATH or MATP course is required. See appendix 16.
- No more than 15 credits of courses from outside of MANE (including the MATH course) may be counted towards the degree. These courses are limited to 9 credits of [Engineering](#) or [Science](#) courses of a technical nature, and 6 credits of coursework from outside of School of Engineering or Science.
- Courses required for the completion of a Bachelor's degree in Mechanical, Aerospace, or Nuclear Engineering (MANE) are not eligible to be applied to a graduate degree in the same program.
- A maximum of **3 credits** of [Individual Project/Independent Study](#) are permitted. **Individual Project / Independent Study credits must not be completed with the same faculty member as the student's graduate advisor.**
- Each full-time student must register each semester for Graduate Seminar MANE-6900 and attend the required number of seminars. **This requirement does not apply to co-terminal students.**

3.3.3 Final Project:

As a final project (in lieu of a thesis), students pursuing a Master of Engineering (MEng) degree are expected to prepare a poster and present their work at the MEng graduate poster session held in the MANE department at the end of the semester. Graduates may refer to [Section 1.2.1](#) for the scheduled date, time and location. The poster may be prepared in any format, style or size as agreed upon between the student and advisor. **The poster must be approved by the advisor at least a week prior to the event.**

Alternative arrangements may be considered for extenuating circumstances. In these cases, the alternative method of completing the presentation requirement must be arranged with the student's graduate advisor and confirmed with the Office of Graduate Student Services (OGSS).

The final project presentation requirement does not apply to Master of Engineering students in the EDUCATION FOR WORKING PROFESSIONALS program. For details on EDUCATION FOR WORKING PROFESSIONALS program degree requirements, students should refer to [Chapter 5](#).

3.4 **MATH Requirement:**

The intent of the MANE graduate degree mathematics requirement is for you, in consultation with your advisor, to embrace higher levels of problem solving in your research and course work. This information provides guidance to help you have that discussion with your advisor.

From your undergraduate studies, you know that *problem solving* and *mathematical modeling* are synonymous. The ability to-

- express a physical problem in mathematical terms,
- obtain a solution using appropriate methods and tools, and
- interpret the results

is fundamental to what engineers do. As your graduate studies delve deeper into engineering analysis, deeper and more robust mathematical methods and tools are advantageous, and sometimes necessary.

Courses that Satisfy the Requirement

Table 1 on appendix 16 lists courses from the [Department of Mathematical Sciences](#) that are most likely to be relevant to a MANE graduate degree, and that most graduate students will have the prerequisites for. These include courses in the subject areas of Mathematics (MATH), and Mathematical Programming, Probability, and Mathematical Statistics (MATP). As indicated, some courses have prerequisites that are required or are somewhat popular among undergraduate students in MANE. Courses not in Table 1 may also be appropriate in certain circumstances and are acceptable, subject to your advisor's approval for your Plan of Study.

MANE sometimes also offers MANE-5000 *Advanced Engineering Mathematics* as a blended course (i.e., partially via distance education) through the Hartford / EDUCATION FOR WORKING PROFESSIONALS program. This course will also satisfy the department mathematics requirements.

You should review the catalog descriptions of the various mathematics courses and discuss with your advisor which may be most applicable to your research area and MANE course interests.

Restrictions

To satisfy the requirement, select at least one course at the 4000 or 6000 level, for three or more credits. The course may be the MANE-5000 course, from the MATH or MATP subject areas at Rensselaer, or transferred as such with approval from the Department of Mathematical Sciences according to Rensselaer's Office of Graduate Education rules for transferring graduate courses, as shown in the [Transfer Credit Approval form](#).

A course that is required for an undergraduate major may not be applied to a graduate degree. For example, MATH-4800 Numerical Computing is required for undergraduate Aeronautical Engineers at Rensselaer, and may not be applied to an Aeronautical Engineer's graduate program, nor may it be used for an Aeronautical Engineering graduate degree regardless of the student's undergraduate major. (Note that, while Numerical Computing may not be directly applicable, it is a useful prerequisite for other valuable mathematics courses.)

Five Year Co-Terminal Program

The five-year co-terminal degree timeline is achievable by many students in good academic standing. Students who enter Rensselaer with some college credits (for example AP credits) will find it easiest to complete the program in five years (i.e., one year beyond the bachelor's degree).

Students completing a **Master of Science (MS)** degree in Mechanical, Aerospace & Nuclear Engineering (MANE) will complete a time-intensive thesis. Students completing a **Master of Engineering (MEng)** degree in MANE will complete a master's research project.

4.1 Steps for Completing a Co-Terminal Master's Degree in Mechanical, Aerospace & Nuclear Engineering (MANE):

Students will complete a [Graduate Plan of Study](#) form as part of their application when they apply to the co-terminal program. They will also choose a faculty member to act as the graduate advisor, whose endorsement on the application is required before the application will be approved by the Graduate Program Director (GPD).

Once admitted, the MANE department's requirements to complete a co-terminal master's degree are as follows:

- Complete all required course work on the Plan of Study. The courses taken must agree with the Plan of Study.
- Revise Plan of Study form as necessary.
- Form a MS committee (for students completing a Master of Science degree only).
- MS students must submit a [Nomination of Master's Committee form](#) which must be received by the deadline specified for that semester in the [Academic Calendar](#).
- Submit thesis (MS) to the [Office of Graduate Education](#) or present research project (MEng).

4.1.1 Institute Requirements for Co-Terminal Students:

The [Institute requirements to complete a co-terminal master's degree](#) are as follows:

- The minimum average of all grades used for credit toward an advanced degree must be B (3.0). The student will not be eligible to receive their degree if their cumulative GPA is below 3.0 when they apply to graduate.
 - Incompletes ("I" grades) must be completed within one semester and the work required to fulfill the course requirements is determined by the advisor. An "I" grade will be counted as an "F" if the work is not completed in time.
 - Courses with a grade of "D" or below are not eligible to be counted towards a graduate degree.
 - Receiving two "F" grades may trigger dismissal from the graduate program.

- The Pass / No Credit option cannot be used for courses applied towards a graduate degree.
- Submit a [Graduate Plan of Study](#) (GPS) before the end of the second semester. To graduate, the courses students have taken must agree with the GPS. They can file a revised GPS to ensure agreement.
 - At least half the total credit hours presented toward the degree must have the suffix numbers 6000-6999.
- File a degree application with the Registrar's Office by the date specified in the academic calendar for the semester in which a student plans to graduate.
- Must be registered each term and complete all requirements of the [Master's Degree Checklist](#) to obtain their degree.
- Bachelor's degree must be completed prior to the Master's degree. File degree application for the Bachelor's upon completion. File degree application for Master's degree with the Registrar's Office by the date specified in the academic calendar for the semester in which a student plans to graduate.
- Must be registered each term as a full-time student.
- Full-time students must meet all of the above requirements within five years (10 semesters). **Co-terminal students are not eligible for part-time status.**

Please note that when registering for thesis, dissertation, or project credits on (SIS) website, students will need to specify the number of credits that they intend to register for, since the default number shown is one credit hour.

In addition to these requirements, students should be familiar with the information in the [Rensselaer Catalog](#) and the [Institute Graduate Tuition Policy](#) in order to plan out master's study appropriately.

4.2 Registration:

Co-terminal students often encounter some unique challenges when registering for graduate courses and credits. Registration guidelines for co-terminal students are as follows:

- Students must register for 6 credits of MANE 6990 thesis (MS) or MANE 6980 project (MEng) credits.
- The [Graduate Plan of Study](#) form must be updated each semester if planned coursework has changed. In these instances, it is best for students to contact the Office of Graduate Student Services (OGSS) to ensure that they are still on track to graduate and are meeting all requirements for their degree.
- **Co-terminal students are not required to attend graduate seminars.**
- Students must be registered for **no more than 15 credits** for each semester that they are taking graduate courses to count towards their ME or MS degree. An exception to this is when a required course (such as a 4-credit MATH course) brings the total number of credits for a semester to 16.
- The Pass / No Credit option cannot be used for courses applied towards a graduate degree.

Please note that when registering for thesis, dissertation, or project credits on the [\(SIS\) website](#), students will need to specify the number of credits that they intend to register for, since the default number shown is one credit hour.

4.3 Co-Terminal Student Advising:

Students are required to meet with their graduate advisors at least at the beginning of each semester, from the time they are accepted into the co-terminal degree program until the time they are awarded their degrees. Most critically, students must submit an updated [Plan of Study](#), approved by their advisor, at a date between their pre-registration for their final semester and the start of that final semester.

Confirming a Graduate Advisor:

Co-terminal students must visit the Office of Graduate Student Services (OGSS) or send an email to maceyb2@rpi.edu to confirm their graduate advisor by the beginning of the semester that they start graduate research. They must also inform OGSS if they choose to work with a different faculty member. No further action is required.

4.4 Curriculum:

The curriculum requirements for the co-terminal master's degree are the same as the curriculum requirements for the traditional master's degree in the Mechanical, Aerospace & Nuclear Engineering (MANE) department. The same rules, regulations, and requirements apply to co-terminal students as they would master's students. One notable exception to this is the **co-terminal students are not required to attend graduate seminars**. Courses are selected based on relevancy to chosen research topics and may be changed at the discretion of the student and graduate advisor.

Please note that co-terminal students completing a Master of Science degree must adhere to the academic deadlines and should pay particular attention to the deadline to submit the [Nomination of Master's Committee Form](#) and the thesis submission deadline. These deadlines are posted every semester on the [Academic Calendar](#).

Co-terminal students completing a Master of Engineering (MEng) degree are expected to attend a poster session at the end of the semester they graduate.

Students should refer to [Chapter 3](#) for more details on the requirements for their particular degree.

4.5 Financial Aid for Co-Terminal Students:

In most cases, all Rensselaer aid used for an undergraduate degree continues through the 5th year of study. However, upon receiving their B.S. degree, students are no longer eligible for undergraduate financial aid. It is highly recommended that co-terminal students meet with a financial aid representative to confirm funding options. Co-terminal students are eligible to apply for competitive graduate fellowships such as the NSF fellowship, SMART fellowship, and the Rickover Fellowship Program in Nuclear Engineering.

Please note that co-terminal students who have not completed their degree requirements by the end of their final year (10th semester) may not be granted their degree.

Education for Working Professionals

Through the Rensselaer's Education for Working Professionals, working engineering professionals and recent graduates with work experience can complete their degree in three years and one semester as part-time students. The Education for Working Professionals Master of Engineering (MEng) degree offers classes taught in a blended format (a mix of online and face-to-face meetings) and allow students to continue their careers while pursuing the MEng.

General Overview:

- The Education for Working Professionals MEng degree consists of a total of 30 credit hours.
- The program results in a Master of Engineering in Mechanical Engineering degree.
- Program includes coursework from energy, manufacturing, mechanics and systems concentrations to prepare the well-rounded problem-solver.
- The program is delivered using online and blended instruction designed to fit into the lives of busy professionals.
- Masters Project 1/2 are applied projects the student develops with a faculty member to demonstrate program mastery.
- Significant online instruction and in-person class meetings take place every 2-4 weeks.
- Face-to-face instruction takes place in Troy, NY, and Hartford and Groton, CT.

Please note that the Education for Working Professionals MEng degree program requirements differ from the traditional MEng degree program.

5.1 General Institute Policies and Registration:

To receive a Master of Engineering degree in the Mechanical, Aerospace & Nuclear Engineering (MANE) Education for Working Professionals, students must:

- Successfully complete 30 graduate level credits.
- Complete 18 credits with the 6xxx MANE designation.
- Successfully complete Master's Professional Project MANE-6970 (for a letter grade).
- Complete all courses on a [Graduate Plan of Study](#) form. The courses taken must agree with the Plan of Study form.
- Have a final GPA of 3.0 or above.
 - Courses with a grade of "D" or below are not eligible to be counted toward a graduate degree.

- Incompletes (“I” grades) must be completed within one semester and the work required to fulfill the course requirements is determined by the advisor. An “I” grade will be counted as an “F” if the work is not completed on time.
- Receiving two “F” grades may trigger dismissal from the graduate program.
- Complete all degree requirements within three years and one semester.

In order to register for courses and project credits, Education for Working Professionals students must visit the [Student Information System \(SIS\) website](#) to register for courses and **Master’s Project (MANE 6970)** credits under the name of their graduate advisor. Courses are selected based on relevancy to chosen research topics and may be changed at the discretion of the student and graduate advisor.

When registering on SIS, students must register for the correct section for each course that they will be taking. If students are attending a course at Hartford, they should select the section indicated by “H01”. For courses attended at Groton campus, they should register for section “G01”. For courses attended at Troy campus, they should register for section “T”; for Pratt & Whitney sections, “PW01”.

5.2 **Advising:**

Once admitted to the program, students will be assigned a graduate advisor who will help students to select courses appropriate to their research interests. For any issues concerning advising, the student should contact the Office of Graduate Student Services (OGSS) in MANE on Troy campus.

5.3 **Curriculum:**

The curriculum for the Master of Engineering in Mechanical Engineering is as follows:

ISYE 4240	Engineering Project Management
MANE 5000	Advanced Engineering Mathematics
MANE 6960	Advanced Heat Transfer
MANE 6170	Mechanics of Solids
MANE 4240	Introduction to Finite Elements
MANE 6720	Computational Fluid Dynamics
MANE 6970	Professional Project 1
MANE 4550	Analysis of Manufacturing Processes
MGMT 6960	Lean Six Sigma 1
MANE 6970	Master’s Professional Project

5.4 EDUCATION FOR WORKING PROFESSIONALS Contacts and Web Links:

Hartford Campus:

Director, Student Records & Administrative Services:	Natalie Sutera (sutern@rpi.edu)
Administrative Specialist, Academic Programs Department:	Linda Kresge (kresgl@rpi.edu)
Director, Technical & Information Services:	Brian Clement (clemeb@rpi.edu)

Faculty

<u>Prof. Francisco Cunha:</u>	Mechanical & Aerospace Engineering	cunhaf@rpi.edu
<u>Prof. Ernesto Gutierrez:</u>	Mechanical & Aerospace Engineering	guttee@rpi.edu
<u>Prof. Michael Hughes:</u>	Mechanical & Aerospace Engineering	hughem6@rpi.edu
<u>Prof. Uzma Mushtaque:</u>	Mechanical & Aerospace Engineering	mushtu@rpi.edu

Troy Campus:

Office of Graduate Student Services (JEC 2002)

Graduate Program Director:	Theo Borca-Tasciuc (borcat@rpi.edu)
Sr. Student Services Administrator:	Beth Macey (maceyb2@rpi.edu)
Administrative Specialist:	Sue Miller (milles7@rpi.edu)

Web Links:

Academic Calendar:	http://www.rpi.edu/academics/calendar/
Learning Management System (LMS):	https://lms.rpi.edu/webapps/login/
Student Information System (SIS):	http://sis.rpi.edu/
Webmail:	https://webmail.rpi.edu/
Help Desk:	http://www.ewp.rpi.edu/hartford/tis/forms/help.html
Accounts:	http://www.ewp.rpi.edu/student_services/orientation/account_info.html
Wireless:	http://www.ewp.rpi.edu/hartford/tis/internal/wireless/
Library:	http://library.rpi.edu
E-bills:	http://finance.rpi.edu/update.do?catcenterkey=119
Financial Aid:	http://ewp.rpi.edu/financial_aid/index.html

Financial Assistance and External Support

Financial assistance to graduate students within the department of Mechanical, Aerospace and Nuclear Engineering falls into two principal categories: fellowships and assistantships. Assistantships are either graduate research assistantships or graduate teaching assistantships. Stipend payments for assistantships are usually processed twice a month, while fellowship payments follow a payment schedule determined by the individual fellowship. Graduate advisors and the MANE department make every effort to provide aid for the PhD students and almost all of them receive full financial support.

Rensselaer Polytechnic Institute requires that fellowship holders and graduate assistants must register for at least 12 credits per semester to maintain full-time status, with a maximum of 15 credits. The only exception is for teaching assistants, who may register for a minimum of 9 credits per semester to maintain full-time status.

6.1 Teaching Assistants (TA) and Research Assistants (RA):

Assistantships are contracts for students to do research or assist faculty in the classroom in exchange for salary and tuition benefits.

Teaching Assistant: A matriculated and registered graduate student who assists a faculty member to teach his or her course. Duties may vary and include: preparing for class sections and/or labs, grading exams or papers, and holding regular office hours. Teaching assistants are not expected to individually assign final grades. Continuation of a teaching assistantship depends on the quality of the work performed and academic performance.

If assigned a teaching assistantship, you are required to provide course assistance and be available on campus throughout the entire semester. **You must be on campus by the first day of classes, and cannot leave until the last day of exams.**

Research Assistant: A matriculated and registered graduate student who participates in research under the supervision of a faculty member. For the most part, research assistants are selected by individual faculty with sufficient research funding. Continuation of a research assistantship depends on the productivity and quality of the research performed, availability of research funds, and academic performance.

6.2 Duration of Financial Assistance:

Students who receive financial assistance are normally continuously supported, either on a 9-month basis or on a 12-month basis as long as they demonstrate satisfactory progress in a degree program. Financial assistance for PhD students includes a stipend (for TAs and RAs) and covers tuition costs. Continuation of financial aid is contingent upon the availability of funds and satisfactory academic/research performance.

Please note that support via teaching assistantships is limited to a total of four semesters of support as per the [Graduate Tuition and Student Support policy](#). Additional support may be provided in the form of graduate research assistantships or fellowships.

To remain eligible for current and future federal financial loan programs, students must be in good academic standing (SAP). For additional information on SAP, students should refer to the [Graduate Federal Satisfactory Academic Progress](#) regulations document.

6.3 Fellowships and External Funding Opportunities:

An alternative way for graduate students to receive financial assistance is through fellowships and scholarships. The MANE department offers information sessions, workshops, and individual assistance to help students apply to fellowships and create competitive applications to maximize the chances of success. External funding opportunities include fellowships, scholarships, international programs, and internships. Additional funding options are available for international, underrepresented minorities, and female applicants.

Most fellowship deadlines fall between September and December of each year. Students receive an email every month announcing upcoming opportunities and submission deadlines.

If students are interested in applying to fellowships or external funding programs, they are encouraged to visit the [Office of Graduate Education](#) on upcoming external fellowships and scholarships. Students are also welcome to visit the Office of Graduate Student Services in MANE to receive information on the various opportunities available and for assistance with the application process.

6.3.1 Cooperative Education & Professional Opportunities:

Rensselaer's Cooperative (Co-op) Education program provides graduate students with a method of external funding which allows for an integration of academic curriculum and real-world work experience, can help to confirm or redirect career decision-making through on-the-job experience in a chosen field, provides financial assistance for educational costs through employer-paid wages and can improve job opportunities after graduation by granting valuable work experience and contact with potential future employers.

There are two co-op options — **full time co-op** and **parallel co-op**. Students on **full time co-op** work full time for an employer recognized by the Co-op program as able to provide the student with a work experience that will reinforce career objectives. A **parallel co-op** is usually worked locally and is comparable to a part-time job. Parallel co-op students generally enroll for two or three courses (but no more than 12 credits) while on co-op.

Graduate students must have at least a 3.2 GPA to be eligible for a co-op and they may work for one term (semester or summer) up to one calendar year. Also, students must have at least one term of full-time study remaining in their academic program. Students interested in applying for a co-op should visit the **Center for Career & Professional Development (CCPD)**'s [website](#) on the Co-op Education program for details.

The CCPD also provides a wide variety of comprehensive services to assist students seeking internship and summer employment as well as general career development opportunities. Students are strongly encouraged to visit the [CCPD's general website](#) for more information.

Appendices

These appendices are for reference only.
Please use official forms found on the [Registrar](#) and/or [Office of Graduate Education's](#) website.



Rensselaer

Department of Mechanical, Aerospace, and Nuclear Engineering
Program Planner

Doctoral Program in Mechanical, Aerospace, or Nuclear Engineering

(for students entering with a bachelor's degree)

Name _____

Entry Term _____

Graduation Requirements: **72 credits**

- √ A minimum of 2/3 of the total course credits listed in the Plan of Study must be at the 6000-6999 level. MANE-9990 Dissertation is not considered course work credit. (If 36 course credits are used on a plan of study, the 2/3 rule applies.)
- √ 3-4 credits in advanced mathematics (4000-6000 level)
- √ No more than 12 credits of 4000-level courses can be applied to a 36 course credit plan of study. This includes applying a MATH course at the 4000-level.
- √ At least 18 credits must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- √ No more than 18 credits of course work from programs outside of MANE are accepted, including a MATH course.
- √ Register for 36 credits of dissertation (MANE-9990) with advisor approval*

Course #	Course Title	Credits	Term/Year
I. One Advanced Mathematics Course (3-4 cr.)			
MATH-_____	_____	_____	_____
II. MANE Courses (18-21 cr., exact number depends upon I, II, IV)			
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____

MANE-_____ _____
 MANE-_____ _____

III. External courses from the Schools of Science or Engineering, or additional MANE courses. (15 cr., exact number depends upon I, II, IV)

_____-_____ _____
 _____-_____ _____
 _____-_____ _____
 _____-_____ _____
 _____-_____ _____

IV. Dissertation Credits (36 cr., exact number depends upon I, II, III)*

MANE-9990 _____
 MANE-9990 _____
 MANE-9990 _____
 MANE-9990 _____
 MANE-9990 _____

Total Credits: 72 (total courses and credits completed)

***In some cases, students may complete more courses resulting in fewer required dissertation credits (with advisor and Graduate Program Director approval), as long as the total number of credits for the degree is 72.**

Doctoral Plan of Study w/BS 1

***Please note that all credits and courses must be listed chronologically**

Graduate Plan of Study



Name _____ RIN _____ Email _____

Expected Graduation Date _____ Advisor _____

Degree M.S. M. Eng. M.B.A. M. Arch. M.F.A. Ph.D. D. Eng.

Program _____ Dual Degree _____ Check if Co-terminal

*F=Fall, S=Spring, U=Summer

Course Subject	Course Number	Course Title	Credit Hours	Semester		Check where appropriate					
				F	S	U	Year	Required	Elective	Transfer	Waived
		I. Advanced MATH Course (3-4 credits)	3								
MATH	xxxx										
		II. MANE Courses (18-21 credits)	18								
MANE	xxxx										
MANE	xxxx										
MANE	xxxx										
MANE	xxxx										
MANE	xxxx										
MANE	xxxx										
		III. External Courses (Maximum of 15 credits)	15								
		IV. Dissertation Credits (36 credits)	36								
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
MANE	9990										
		*Shared Courses (Dual Degree Programs Only) See Instructions	72	Total Credit Hours							

Student _____ Signature _____ Date _____

Advisor _____ Signature _____ Date _____

Graduate Program Director _____ Signature _____ Date _____

Please submit original to Office of Graduate Education (OGE)

OFFICE OF GRADUATE EDUCATION APPROVAL:
 Signature _____ Date _____
 Graduate Education will send copies to: _____ Registrar _____ Department _____

Plan Status New

Revised November 2017



Program Planner

Doctoral Program in Mechanical, Aerospace, or Nuclear Engineering

(for students entering with a master's degree)

Name _____ Entry Term _____

Graduation Requirements: 48 credits (of 72 total credits)

Master's degree is applied to doctoral degree (24-30 credits) *

- √ All courses used to earn the PhD degree must be taken at the 4000 or 6000-6999 level.
- √ 12 course-work credits minimum. At least 9 credits of 6000-6999 level course work must be completed. MANE-9990 Dissertation is not considered course work credit.
- √ IF a student uses more than 12 course-work credits on their Plan of Study, after the MS degree, the 2/3 rule for 6000-6999 level graduate course requirements must also be satisfied.
- √ No more than 3 credits of 4000-level course-work will be accepted.
- √ At least half (6 credits) of the 12 minimum credits must be from MANE. To specify, these courses must contain the MANE prefix or be cross-listed with a MANE course.
- √ No more than 6 credits of courses taken from other Schools of Engineering or School of Science are accepted.
- √ Register for 36 credits of dissertation (MANE 9990) with advisor approval**

Course #	Course Title	Credits	Term/Year
----------	--------------	---------	-----------

I. Master's Degree (24-30 credits*)

Master's Degree and name of institution _____

II. MANE Courses (6-9 cr., exact number depends upon I, II, IV)

MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____

III. External courses from the Schools of Science or Engineering, or additional MANE courses. (6 cr., exact number depends upon I, II, IV)

_____ - _____	_____	_____	_____
_____ - _____	_____	_____	_____
_____ - _____	_____	_____	_____

V. Dissertation Credits (36 cr., exact number depends upon I, II, III)*

MANE-9990	_____	_____	_____
MANE-9990	_____	_____	_____
MANE-9990	_____	_____	_____
MANE-9990	_____	_____	_____
MANE-9990	_____	_____	_____

Total Credits: 48 (of 72 total courses and credits completed) *

***Students entering with a master’s will generally have 24 credits applied to their doctoral degree, except for students who earned their master’s from RPI (30 credits).**

****In some cases, students may complete more courses resulting in fewer required dissertation credits (with advisor and Graduate Program Director approval), as long as the total number of credits for the degree is 48 (of 72).**

Graduate Plan of Study



Name _____ RIN _____ Email _____

Expected Graduation Date _____ Advisor _____

Degree M.S. M. Eng. M.B.A. M. Arch. M.F.A. Ph.D. D. Eng.

Program _____ Dual Degree _____ Check if Co-terminal

*F=Fall, S=Spring, U=Summer

Course Subject	Course Number	Course Title	Credit Hours	Semester		Check where appropriate				
				F	S U*	Year	Required	Elective	Transfer	Waived
I. Master's Degree from xxxxxxxx (24-30 cr.)			24							
II. MANE Courses (9-12 credits)			9							
MANE	xxxx									
MANE	xxxx									
MANE	xxxx									
III. External Courses (Maximum of 6 credits)			3							
IV. Dissertation Credits (36 credits)			36							
MANE	9990									
MANE	9990									
MANE	9990									
MANE	9990									
MANE	9990									
MANE	9990									
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MANE	9990									
MANE	9990									
MANE	9990									
MANE	9990									
*Shared Courses (Dual Degree Programs Only) See Instructions			72	Total Credit Hours						

Student _____ Signature _____ Date _____

Advisor _____ Signature _____ Date _____

Graduate Program Director _____ Signature _____ Date _____

Please submit original to Office of Graduate Education (OGE)

OFFICE OF GRADUATE EDUCATION APPROVAL:
Signature _____ Date _____
Graduate Education will send copies to: ___ Registrar ___ Department

Plan Status ___ New

Revised November 2017



Program Planner

Master's Degrees in Mechanical, Aerospace, or Nuclear Engineering

Name _____

Entry Term _____

Graduation Requirements: 30 credits

- √ All courses used to earn the master's degree must be taken at the 4000 or 6000-6999 level.
- √ 24 course-work credits minimum.
- √ A minimum of 12 course-work credits must be completed at the 6000-6999 level.
- √ At least half the total credit hours presented toward the degree must have the suffix numbers 6000-6999.
It is recommended that a prospective PhD student complete 2/3 of their coursework at the 6000 level.
- √ One (1) 4000- 6000 level MATH or MATP course is required.
- √ A minimum of 15 course-credits must be from MANE.
- √ Students must register for 6 credits of thesis (MANE 6990) or project (MANE 6980)

Course #	Course Title	Credits	Term/Year
I. One Advanced Mathematics Course (3-4 cr.)			
MANE-_____	_____	_____	_____
II. Thesis (MS) or Project (MEng) (6 cr.)			
<u>MANE-6990 or 6980</u>	Master's Thesis or Master's Project	_____	_____
III. Foundation Courses (9-12 cr., exact number depends on I, II, IV)			
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____
MANE-_____	_____	_____	_____
IV. External courses from the Schools of Science or Engineering, or additional MANE courses. (12 cr., exact number depends upon I, II, III)			
_____ - _____	_____	_____	_____
_____ - _____	_____	_____	_____
_____ - _____	_____	_____	_____
_____ - _____	_____	_____	_____
Total Credits:	30		

Graduate Courses in Mechanical, Aerospace & Nuclear Engineering (MANE)

The tables on these pages are to help you plan your schedule. However, unforeseen circumstances may require this list to be modified without notice. There is no guarantee that these courses will be offered, or that their scheduled times will not conflict.

Applied Mechanics		
Course Number	Course Title	Schedule
MANE 4170	Machine Dynamics	Spring
MANE 4180	Mechanisms	Spring
MANE 4610	Vibrations	Fall
MANE 4670	Mechanical Behavior of Materials	Fall
MANE 496x	Rotor dynamics	On sufficient demand.
MANE 4830	Acoustics Engineering	Spring even-numbered years
MANE 6110	Kinematic Synthesis	On sufficient demand.
MANE 6170	Mechanics of Solids	Fall
MANE 6180	Mechanics of Composite Materials	Upon availability of instructor. X/listed w/ CIVL-6180
MANE 6250	Continuum Mechanics	Spring term odd-numbered years.
MANE 6420	Multibody Dynamics	Upon availability of instructor. X/listed w/ CIVL-6180
MANE 6460	Fracture Mechanics & Fatigue of Materials	Spring term even-numbered years.
MANE 6730	Tribology	Fall term even-numbered years.
MANE 696x	Experimental Mechanics	Fall term even-numbered years.
Thermal and Fluids		
MANE 4080	Propulsion Systems	Fall
MANE 4710	Heat Transfer	Fall
MANE 4750	Combustion Systems	On sufficient demand.
MANE 4760	Heating, Ventilation & Air Conditioning	Fall
MANE 4800	Boundary Layers & Heat Transfer	Fall and spring terms annually.
MANE 6520	Fluid Mechanics	Fall
MANE 6540	Advanced Thermodynamics	Upon availability of instructor.
MANE 6550	Theory of Compressible Flow	Spring term odd-numbered years.
MANE 6560	Incompressible Flow	Spring term even-numbered years.
MANE 6650	Convective Heat Transfer	Spring term even-numbered years.

MANE 6830	Combustion	On sufficient demand. X/list w/MANE 4750 and CHME 6830
MANE 6840	An Introduction to Multiphase Flow & Heat Transfer I	Upon availability of instructor. X/list w/ CHME 6840
MANE 6850	An Introduction to Multiphase Flow & Heat Transfer II	Upon availability of instructor.
MANE 696x	Physics of Micro- and Nano-Fluidics	Spring term odd-numbered years.
MANE 696x	Advanced Heat Transfer	Fall. X/listed w/MANE-4710
Manufacturing & Design		
ENGR 4710	Manufacturing Processes & Systems Lab I (equivalent to a MANE 4000-level course)	Fall
ENGR 4720	Manufacturing Processes & Systems Lab II (equivalent to a MANE 4000-level course)	Spring
MANE 4180	Mechanisms	Spring
MANE 4280/696x	Design Optimization: Theory & Practice / Intro to Multidisciplinary Design Optimization	Fall
MANE 4490	Mechatronics	Fall & Spring
MANE 4550	Analysis of Manufacturing Processes & Systems	Spring
MANE 4120/6120	Robotics I (cross-listed with ECSE, CSCI, and ISYE)	Fall
MANE 6110	Kinematic Synthesis	On sufficient demand.
MANE 6230	Advanced Manufacturing Processes & Systems	Fall
MANE 6490	Plasticity	Spring term even-numbered years.
MANE 6600	Systems Analysis Techniques	Fall
ISYE 6600	Design of Manufacturing Systems & Supply Chains	Fall
MANE 6800	Manufacturing Systems Integration	Spring
MANE 696x/ECSE 6440	Optimal Control Theory	Spring term even-numbered years.
MANE 696x	Additive Manufacturing	On sufficient demand.
MANE 696x	Micro/Meso-scale Manufacturing	Spring even-numbered years
Computational Methods		
MANE 4240	Introduction to Finite Elements	Fall & Spring
MANE 4140	Introduction to Computational Fluid Dynamics	Spring
MANE 6660	Fundamentals of Finite Elements	Fall
MANE 6680	Finite Element Programming	Spring term odd-numbered years.
MANE 6720	Computational Fluid Dynamics	Spring term odd-numbered years.

Nuclear Energy Production		
MANE 4450	Nuclear Fuel Management	Upon availability of instructor.
MANE 6280	Nuclear Reactor Analysis II	Spring
MANE 6290/496x	Radiation Transport Methods	Spring term odd-numbered years.
Nuclear Systems Engineering		
MANE 4460/6380	Engineering Materials for Nuclear Applications / Nuclear Reactor Materials	Spring
MANE 6310	Reactor Design	Upon availability of instructor.
MANE 6320	Radioactive Waste Management	Upon availability of instructor.
MANE 6360	Reactor Reliability & Safety	Fall term even-numbered years.
MANE 6370	Thermal-Hydraulic Design of Nuclear Reactors	Upon availability of instructor.
MANE 6840	An Introduction to Multiphase Flow & Heat Transfer I	Upon availability of instructor.
MANE 6850	An Introduction to Multiphase Flow & Heat Transfer II	Upon availability of instructor.
Radiation Technology		
MANE 4410/6390	Applied Atomic & Nuclear Physics / Atomic & Nuclear Physics Applications	Fall
MANE 4420/6260	Radiation Technology	Fall
MANE 496x/6290	Introduction to Radiation Transport Methods	Spring term odd-numbered years.
Controls		
MANE 4280/696x	Design Optimization: Theory & Practice / Intro to Multidisciplinary Design Optimization	Fall
MANE 4490	Mechatronics	Fall & Spring
MANE 496x/ECSE 4440	Control Systems Engineering	Fall
MANE 496x / ECSE 4510	Digital Control Systems	Spring
MANE 4120/6120	Robotics I (cross-listed with ECSE, CSCI, and ISYE)	Fall
MANE 6600	Systems Analysis Techniques	Fall
MANE 696x / ECSE 4120	Optimal Control Theory	Upon sufficient demand.
MANE 696x / ECSE 6420	Nonlinear Control Systems	Upon sufficient demand.

Aero structures		
Course Number	Course Title	Schedule
MANE 4240	Introduction to Finite Elements	Fall & Spring
MANE 696x	Structural Dynamics	Fall
Aerodynamics		
MANE 4140	Introduction to Computational Fluid Dynamics	Spring
MANE 6520	Fluid Mechanics	Fall
MANE 6530	Turbulence	Spring term odd-numbered years.
MANE 6550	Theory of Compressible Flow	Spring term odd-numbered years.
MANE 6560	Incompressible Flow	Spring term even-numbered years.
MANE 6720	Computational Fluid Dynamics	Spring term odd-numbered years.
MANE 6570	Aerodynamic Flow Control	Fall odd-numbered years
MANE 696x	Experimental Methods of Micro/Macro Fluid Dynamics	
Rotorcraft		
MANE 6060 / 4200	Rotorcraft Performance, Stability, & Control	Fall
MANE 696x / 4860	Helicopter Design	Spring
MANE 69xx / 49xx	Multi-Rotor Unmanned Air Vehicles	Fall - if sufficient demand

The schedule listed above applies to courses at Troy Campus. However, some courses will be offered in blended format, with a mix of online content and face-to-face meetings. These courses will be available to both Troy students and students in the Graduate Program for Working Professionals. For a list of blended courses, please refer to **Section 5.3.1.**

Students are encouraged to speak with their advisors to discuss additional course options.

Suggested Mathematics (MATH) Courses

4000 and 6000-level courses used to fulfill the MATH course requirement

Course Number	Course Title	Schedule
MATH 4100	Linear Algebra	Fall
MATH 4300	Introduction to Complex Variables: Theory & Applications	Spring
MATH 4400	Ordinary Differential Equations & Dynamical Systems	Fall
MATH 4500	Methods of Partial Differential Equations of Mathematical Physics	Spring
MATH 4600	Advanced Calculus	Fall & Spring
MATH 4700	Foundations of Applied Math	Fall
MATH 4800	Numerical Computing	Fall & Spring
MATH 4820	Introduction to Numerical Methods for Differential Equations	Spring
MATH 6600	Methods of Applied Math	Fall
MATH 6620	Perturbation Methods	Spring even-numbered years
MATH 6640	Complex Variables and Integral Transforms with Applications	Spring odd-numbered years
MATH 6660	Stochastic Processes & Modeling	Spring even-numbered years
MATH 6800	Computational Linear Algebra	Fall
MATH 6820	Numerical Solution of Ordinary Differential Equations	Spring odd-numbered years
MATH 6840	Numerical Solution of Partial Differential Equations	Fall odd-numbered years
MATH 6860	Finite Element Analysis	Spring even-numbered years

Research

MANE offers a wide range of disciplines that are sufficiently flexible to accommodate individual interests. The main research interests are separated into several broad areas which include:

Mechanics and Materials

Research Areas: Acoustics, Multi-body dynamics, Fatigue and fracture processes, Friction and wear, Biomechanics, Plasticity, Composites, Microelectronic materials, Materials under extreme loading conditions, Irradiation hardening, Nano mechanics of materials, and Multiscale computational methods.

Participating faculty: Kurt Anderson, Terry Blanchet, Suvrano De, Nikhil Koratkar, Jie Lian, Emily Liu, Antoinette Maniatty, Kristen Mills, Catalin Picu, Henry Scarton, Mark Shephard, John Tichy, Daniel Walczyk, and Lucy Zhang.

Thermal and Fluids Engineering

Research Areas: Energy efficiency and sustainability; Advanced microfluidics for thermal management, System level thermal management, heat conduction and solid-state thermoelectric energy conversion in nanostructured materials, Nanoscale thermal metrology, Interfacial heat transfer, Convection and phase-change in micro channels, Structured surfaces for enhanced heat transfer, Nanostructured thermal interface materials, Thermal energy storage materials, Heat generation and dissipation in radio frequency heated magnetic nanoparticles, Microsystems for energy harvesting, Plasmonic nanoparticles spectrally coupled with luminescent solar concentrators, Loop heat pipes, Combustion, and Inertial microfluidics /Opt fluidics.

Participating faculty: Theodorian Borca-Tasciuc, Diana Andra Borca-Tasciuc, Aram Chung, Amir Hirs, Jie Lian, Shankar Narayanan, Matthew Oehlschlaeger, Zvi Rusak, Henry Scarton, Richard Smith, Lucy Zhang, and Wei Zhou.

Design and Manufacturing

Research Areas: Design methodology in general and mechanical engineering design techniques in particular; Tribology, Metrology; Rapid prototyping, Flexible manufacturing, Micro/Nano-scale manufacturing (subtractive and additive techniques), Process modeling, Material design for manufacturing, Sustainable manufacturing, Fiber-composite processing, Fuel-cell manufacturing, Bio-medical manufacturing, New manufacturing techniques, Operation of manufacturing facilities, CAD/CAM, and Diagnostics and controls.

Participating faculty: Terry Blanchet, Aram Chung, Antoinette Maniatty, Sandipan Mishra, Johnson Samuel, Mark Steiner, Daniel Walczyk, and John Wen.

Dynamics and Controls

Research Areas: Adaptive and Smart Optics Systems, Intelligent Building Systems, Control of Micro/Nano-scale Manufacturing, Learning Control Systems, Nonlinear, Robust and Adaptive Control, and Human-in-the-loop Control Design.

Participating faculty: John Wen, Sandipan Mishra, and Kurt Anderson.

Fluid Dynamics / Aerodynamics

Research Areas: Experimental, numerical, and theoretical fluid mechanics, Advanced aerodynamic flow control techniques: passive and active, Aerodynamics of low, moderate and high Reynolds number flows, Manned and unmanned aerial vehicle aerodynamics, Acoustics and vibrations, Compressible flows; Wind energy, Bio fluids, Interfacial hydrodynamics, and Microfluidics.

Participating faculty: Michael Amitay, Aram Chung, Jason Hicken, Amir Hirsra, Assad Oberai, Zvi Rusak, Onkar Sahni, Henry Scarton, John Tichy, and Lucy Zhang.

Advanced Structures / Materials

Research Areas: Active structures, Morphing structures, Cellular structures, Structures with integrated damping capability, Energy absorption capability; Advanced materials including piezoelectric materials, Shape memory alloys and polymers, Electrorheological and magnetorheological fluids, Nano-materials; Advanced composites, Bio-composites, Advanced structural analysis methods, Nonlinear aero elasticity, nonlinear multi-body dynamics, and Computational structural dynamics.

Participating faculty: Farhan Gandhi, Prabhat Hajela, Jason Hicken, Nikhil Koratkar, Emily Liu, Assad Oberai, Catalin Picu, and Daniel Walczyk.

Optimization

Research Areas: Multidisciplinary design optimization, Aerodynamic shape optimization, trajectory optimization, Optimization under uncertainty, Inverse problems and model reduction

Participating faculty: Prabhat Hajela, Jason Hicken, Onkar Sahni, and Assad Oberai.

Space

Research Areas: Spacecraft trajectory control optimization, Spacecraft relative motion optimization, Alternative ways to optimize propellant consumption relying on atmospheric differential drag, Large flexible spacecraft dynamics and control, Space vehicle control, Fluid dynamics in microgravity, and Thermal management in microgravity.

Participating faculty: Kurt Anderson and Amir Hirsra

Combustion / Propulsion

Research Areas: Fuel chemistry; Optical diagnostics, Solid propellants, Spray combustion, Nano-energetics, Swirls, Stabilized combustion, Transonic combustion.

Participating faculty: Matthew Oehlschlaeger and Zvi Rusak.

Nuclear Power Systems

Research Areas: Novel reactor design concepts, Nuclear safety / risk analysis / emergency preparedness, Nuclear thermal hydraulics, Fuel cycle (spent fuel storage, geological repository, re-processing), Fuel design and performance, Nuclear data instrumentation and detector development, Computational methods (neutronics analysis, multi-physics and multi-scale modeling), and Nuclear fusion and energy policy.

Participating faculty: Yaron Danon, Thomas Haley, Wei Ji, Hyun Kang, Emily Liu, Jie Lian, Michael Podowski, Bimal K. Malaviya, Sastry Sreepada, George X. Xu, and Wei Zhou.

Applied Radiation Technologies

Research Areas: Accelerator physics, Neutron, x-ray, and light scattering physics & experiments, Radiation detection and measurement, Novel radiation sources, Nuclear cross-section data measurement and analysis, and Nuclear non-proliferation.

Participating faculty: Peter Caracappa, Wei Ji, Emily Liu and George X. Xu.

Radiation Protection, Medical and Industrial Uses of Radiation

Research Areas: Radiation dosimetry, Imaging and radiotherapy of cancer, Medical isotope production, and Non-destructive testing (civil engineering, materials, oil exploration).

Participating faculty: Peter Caracappa, Yaron Danon, Hyun Kang, Wei Ji, and George X. Xu

Nuclear Materials

Research Areas: Radiation interaction and radiation effects, Advanced nuclear fuels and structural materials, Aging management, Materials for nuclear waste management, and Nanostructured materials for nuclear applications.

Participating faculty: Jie Lian, Emily Liu, and Wei Zhou.

For more information about MANE faculty and their current research, visit the People section of the MANE Department website.

Cross-Cutting Research Areas:

Energy Science and Engineering

Brief description: This cross-cutting research theme is focused on clear common interests in Energy efficiency, Energy storage, Energy harvesting, and Thermal controls. It builds on the strong expertise in fundamental thermal sciences and engineering across Multiscale, Thermal metrology, Nanostructured materials, Electrochemical energy storage, and Microsystem fabrication technologies.

Participating faculty: Theodorian Borca-Tasciuc, Diana Andra Borca-Tasciuc, Jason Hicken, Wei Ji, Nikhil Koratkar, Jie Lian, Emily Liu, Shankar Narayanan, Assad Oberai, Matthew Oehlschlaeger, Michael Podowski, Zvi Rusak, Onkar Sahni, Mark Shephard, Richard Smith, John Tichy, and Lucy Zhang.

Materials, Materials Processing and Controls

Brief Description: MANE faculty are engaged in high impact interdisciplinary research in Materials, Manufacturing and Controls as well as research that effectively links the three disciplines to come up with system level solutions to important technological problems. The research interests of the faculty include materials for Energy, Nano-materials, Nano composites, Nanoscale heat transfer, Thermoelectric, Nano-mechanics, Fiber-reinforced composites, Additive manufacturing, Non-linear controls, Micro-machining, Spaceflight control, Tribology, Non-linear dynamics, Nuclear materials, Bio-materials, Smart materials, Adaptive structures, and Computational Nano and bio mechanics.

Participating faculty: Kurt Anderson, Terry Blanchet, Diana Andra Borca-Tasciuc, Theodorian Borca-Tasciuc, Suvranu De, Farhan Gandhi, Jason Hicken, Amir Hirsra, Nikhil Koratkar, Jie Lian, Emily Liu, Antoinette Maniatty, Sandipan Mishra, Catalin Picu, Johnson Samuel, Mark Shephard, Daniel Walczyk, and John Wen

Human Health and Safety

Brief Description: This cross-cutting research theme is focused on common interests in Biomechanics, Virtual surgery, Radiation dosimetry, Medical robotics, Biomechanical imaging, Experimental Nano-bio-science, Biomedical device and cancer diagnosis, and Biotechnology.

Participating faculty: Diana Andra Borca-Tasciuc, Aram Chung, Suvranu De, Amir Hirsra, Hyun Kang, Antoinette Maniatty, Kristen Mills, Sandipan Mishra, Emily Liu, Assad Oberai, John Tichy, George X. Xu, and Lucy Zhang.

More information on research areas can be found on the **Research** section of the MANE department website.

Research Centers & Laboratories 1

Research Centers

The Center for Flow Physics and Control

Director: Prof. Miki Amitay

The Center for Modeling, Simulation and Imaging in Medicine (CeMSIM)

Director: Prof. Suvranu De

The Gaertner Linear Accelerator (LINAC) Center

Director: Prof. Yaron Danon

Center for Multiphase Research

Director: Prof. Michael Podowski

Research Laboratories

Bio-Optofluidics Laboratory

Director: Prof. Aram Chung

Combustion and Energy Systems Laboratory

Director: Matt Oehlschlaeger

Computational Dynamics Laboratory

Director: Prof. Kurt Anderson

Computational Mechanics Laboratory

Director: Prof. Lucy Zhang

Computational Nanomechanics Laboratory

Director: Catalin Picu

Computational Solid Mechanics Laboratory

Director: Prof. Antoinette Maniatty

Experimental Cell & Tissue Biomechanics Laboratory

Director: Prof. Kristen Mills

Fluid Mechanics and Interfacial Hydrodynamics Laboratory

Director: Prof. Amir Hirsra

Intelligent Systems Automation and Control (ISAaC) Laboratory

Director: Prof. Sandipan Mishra

Laboratory for Noise and Vibration Control Research

Director: Prof. Henry Scarton

Multi-scale Modeling Laboratory

Director: Prof. Assad Oberai

Multiscale Transport and Thermal Energy (MuTATE) Laboratory

Director: Prof. Shankar Narayanan

Nano / Micro-Scale Manufacturing and Material Design Laboratory (Nano-M3 Design Lab)

Director: Prof. Johnson Samuel

Nanoengineering Laboratory

Director: Prof. Diana-Andra Borca-Tasciuc

Nano-Nuclear and Energy Materials Laboratory

Director: Prof. Jie Lian

Nanoscale Thermophysics and Energy Conversion Lab (NanoTEC)

Director: Prof. Theodorian (Theo) Borca-Tasciuc

Nanostructured Devices and Materials Laboratory

Director: Prof. Nikhil Koratkar

Neutron Calibration Laboratory

Director: Prof. Yaron Danon

Nuclear Energy Advanced Modeling and Simulation Laboratory

Director: Prof. Wei Ji

Nuclear Nano-Science and Nano-Engineering (NSNE) Laboratory

Director: Prof. Li (Emily) Liu

Nuclear Plant Reliability and Safety Laboratory

Director: Prof. Hyun Gook Kang

Optimal Design Laboratory

Director: Prof. Jason E. Hicken

Flow Computation and Physics Laboratory

Director: Prof. Onkar Sahni

Radiological Engineering Laboratory

Director: Prof. George Xu & Peter F. Caracappa

Rotorcraft and Adaptive Structures Laboratory

Director: Prof. Farhan Gandhi

The Scientific Computation Research Center (SCOREC)

Director: Prof. Mark Shephard

Theoretical & Computational Fluid Dynamics Laboratory

Director: Prof. Zvi Rusak

Tribological Materials Laboratory

Director: Prof. Thierry Blanchet

Instructional Labs

The Manufacturing Innovation Learning Laboratory (MILL)

The MILL is the foundation for an emerging effort in undergraduate education in Nano manufacturing and other advanced manufacturing technologies at Rensselaer.

The Nuclear Engineering and Engineering Physics Laboratory (NEEP)

The NEEP supports undergraduate education in engineering physics and nuclear engineering. The lab is equipped with facilities and apparatus providing students opportunities to gain hands-on experiences and skills in instrumentation, computer-controlled instrument interfacing and data acquisition, electronics, optical interferometry, Laser-Doppler interferometry, multiphase flow, fluid dynamics, photon-matter interaction and alpha spectroscopy.

The O.T. Swanson Multidisciplinary Design Laboratory (Design Lab)

The O.T. Swanson Multidisciplinary Design Laboratory (a.k.a. the Design Lab) at Rensselaer provides clinical real-world experiences for students that build confidence and teaches integration of discipline-specific knowledge with practice on challenging multidisciplinary design projects. The Design Lab process provides a culminating experience intended to prepare students to enter the workforce. The projects are open-ended, technically challenging design problems that encompass a broad array of important contemporary issues. In addition to defining an important problem, sponsors provide a significant grant and interact directly with the students, faculty and staff who work to provide design solutions.

The Subsonic Wind Tunnel Laboratory

The Subsonic Wind Tunnel Laboratory features a custom-fabricated closed-loop wind tunnel that is used for the undergraduate senior-level fluid dynamics laboratory. Controlling the tunnel is a Rensselaer-developed, Labview-based data acquisition and control system, which also tracks operating conditions. Measurements of pressure, detailed velocity, and aero-dynamic forces can be recorded. Also, the computer-controlled movable top panel and three-dimensional traverse system allow probes to be positioned throughout most of the test section for detailed surveys.

The Walthousen Reactor Critical Facility (RCF)

The Walthousen Reactor Critical Facility is one of only 25 research reactors at U.S. universities. It is the only low power (less than 100 Watts) facility using fuel rods that are similar to those used in commercial light water reactors. Because of its design, the RCF is a unique facility that does not exist anywhere else in the nation and probably not the world. It is ideally suited for fundamental reactor physics measurements and benchmarks evaluating material specimens with relatively high reactivity worth, such as neutron control materials. Students can directly touch the core, without the concerns about loose contamination that often occur in other reactor facilities. In contrast, students working with other reactors are only able to read various instruments from a separate control room while a licensed reactor operator executes the experiment. For this reason, RPI's NE students receive hands-on experience in experimental planning, radiation protection, and criticality safety. Additionally, students who are interested in pursuing a career in nuclear operations receive comprehensive training so they are licensed by the U.S. Nuclear Regulatory Commission for reactor operation. Over the years, the RCF has supplied a large pool of such licensed reactor operators for the U.S. nuclear power industry. The RCF is currently licensed by the USNRC to operate through June 26, 2031.

More information on laboratories can be found on the Labs section of the MANE department website.

Student and Professional Organizations

American Nuclear Society (ANS)

The American Nuclear Society is a not-for-profit, international organization dedicated to promoting the advancement of nuclear science, engineering, and technology. ANS serves its members in their efforts to develop and safely apply nuclear science and technology for public benefit through knowledge exchange, professional development, and enhanced public understanding. ANS consists of over 10,000 members worldwide, including more than 1,000 students. Our chapter consists of approximately 30 active members and is governed by a four-member executive board. Our mission is to provide services to students that will foster personal and career development in a friendly environment.

American Society of Mechanical Engineers (ASME)

ASME is a society for all Engineers that provides opportunities to grow as an engineer and as a professional. Through conferences, competitions and meetings/tours, ASME is a way to explore the many fields of engineering and stay up to date on what is happening across the world. ASME is not strictly for Mechanical engineers, but for anyone majoring in any field of engineering.

MANE Student Advisory Council (SAC)

Established to pull student influence into the MANE Departments official business, the MANE Student Advisory Council betters the student experience by facilitating technical seminars, bringing in guest lecturers, and participating in various administrative tasks. In the past, public forum events, faculty hiring, and seminar series have been provided to the campus community by the Council. **The MANE Student Research & Design Journal** is promoted and published through SAC and can be found on the [MANE Department website](#) and at the [MANE SAC Wordpress website](#).

National Society of Black Engineers (NSBE)

The mission of RPI's chapter of the National Society of Black Engineers is to "increase the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community."

Rensselaer Aeronautical Federation (RAF)

The purpose of the RAF is to promote interest in aviation and aviation safety within the Rensselaer community, to encourage safe and economical flying, and to increase flight proficiency of the membership.

Society of Auto Engineers (SAE)

The Rensselaer Formula SAE Team is a dynamic group of individuals representing a broad array of academic disciplines who collaborate to conceive, design, and fabricate a high performance formula style racecar. The Team was formed in 1991 and participated in competition for the first time in 1992. Since then, we have continued to place competitively, usually in the top third.

Society of Hispanic Professional Engineers (SHPE)

"SHPE changes lives by empowering the Hispanic community to realize its fullest potential and to impact the world through STEM awareness, access, support, and development."

RPI's chapter has established itself as a respectful group of high quality Hispanic students attending Rensselaer Polytechnic Institute with a special focus on science, technology, engineering, and mathematics. They work to develop their members professionally through leadership and community outreach by creating a friendly atmosphere among members.

Society of Women Engineers (SWE)

The Society of Women Engineers (SWE) is an international society designed to encourage and support women in the pursuit of a professional career in the engineering and technological fields, through corporate interaction, community outreach, and social events, both on the local and national levels.

Throughout the year, SWE offers many events focusing on professional development, networking, and outreach to young children. Opportunities include monthly general meetings, presentations, and networking with corporate guests, informational sessions on graduate school and research, scholarships, RPI SWE job resources, conference attendance, outreach events with local Girl Scout troops and many fun socials, which offer the chance to learn new skills, such as taking up the business sport of golf!

Underrepresented Minorities in Engineering

Today's diverse and complex world requires exceptional leaders who lead multidisciplinary teams to solve challenging problems at home and abroad. Rensselaer's underrepresented minority students are breaking barriers to create diverse teams of technological leaders, developing learning communities where they excel academically, and are inspiring younger generations to explore engineering professions and pursue advanced degrees.

Women at Rensselaer Mentor Program (primarily for graduate students who may be interested in mentoring)

Started in 1994, Rensselaer has been growing its women's network with the Women at Rensselaer Mentor Program. The program matches first-year students with a mentor with the same or related major. Matches also take interests into account to help incoming students transition to the college environment at Rensselaer. Mentors help students transition by providing insight and resources about where to go for help, or how to get through a class that they have previously taken. For up-to-date information about the program and to learn more about the current members, please visit their [student-run website](#).

Women in Entrepreneurship

The Severino Center's "Women in Entrepreneurship" programs encompass several initiatives designed to communicate the unique experiences of successful women entrepreneurs and to encourage and support entrepreneurial initiatives among women of all ages. Women in Entrepreneurship sponsors a symposium series to encourage women to pursue careers and entrepreneurial ventures in science and technology by presenting role models in specific fields. At the events, distinguished high school junior women from across the country are honored with the Kathleen M. Severino Future Leader Award in recognition of their academic excellence and leadership interest in science and technology. The symposium's focus is driven by the experiences of many of the award recipients.

Women in Engineering

Rensselaer's women in engineering programs offer a host of opportunities for exceptional women to prepare and succeed in today's technologically advanced and culturally diverse workforce.

Housing

Most graduate students live off campus and arrange housing for themselves. However, the Institute also has a limited number of openings for graduate student housing.

The Rensselaer Graduate Community at City Station

This Rensselaer graduate student housing option is located off campus and is provided through an affiliation with a private developer. It is exclusively for Rensselaer graduate students, and above, (post-doctoral fellows and visiting scholars also are eligible,) who are single, have families, or are married. The housing community is located one block from the southwestern edge of campus. The facility consists of two neighboring buildings - City Station West (for singles) and City Station South (for families and married Rensselaer students). City Station West opened in 2011, and City Station South opened in August 2012.

Singles Housing

The units in City Station West are fully furnished; three and four bedroom units, each with a private bedroom and private bathroom for each resident, in-room internet and cable at no extra cost; free shuttle service to and from RPI; 24-hour security monitoring; common study and gathering areas; dishwashers; air conditioning; an on-site exercise facility; free parking; and street level restaurants and retail stores. Family and married units in City Station South provide the same amenities, but are unfurnished, offer one, two, or three bedroom single-family units, and residents share the City Station West exercise facility.

Full details on both City Station West and South are provided at the College Suites at City Station web site. You may also contact Dennis Gornic, Associate Dean in the Office of Graduate Education at dgornic@rpi.edu and visit the OGE website for the most current information.

TA Evaluation Form

TEACHING ASSISTANT (TA) EVALUATION FORM

- It is the responsibility of the TA to arrange an evaluation meeting with the course instructor(s) upon completion of the TA assignment.
- It is also the responsibility of the TA to return this form to the Graduate Student Services Office following the evaluation meeting. The Graduate Student Services Office will keep a copy of the form in the student's file. In addition, copies will be mailed to the TA, to the course instructor(s), and to the TA's graduate advisor(s).

TA Name: _____

Instructor Name(s): _____

Date of Evaluation: _____

Course Number: _____

Semester/Year: _____

Graduate Advisor Names(s) _____

Evaluation of the TA Performance

(Faculty, please circle the appropriate category)

1. Technical knowledge of the course material:

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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2. Performance during office hours and review sessions:

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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3. Ability to develop new homework and exam problems:

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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4. Ability to grade homework and exam problems accurately and in a timely manner:

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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5. Availability to students:

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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6. Management of the course logistics, including:
 - Preparation of solutions to homework and exam problems.
 - Photocopying of course materials.
 - Maintenance of the course Web site.
 - Preparation of electronic and/or hard-copy versions of the course solution book.

<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>N/A</i>
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7. Ability to communicate student concerns to the instructor(s):
Excellent Very Good Good Average Poor N/A

8. Planning, designing, and supervising of laboratory experiments (for TAs in laboratory courses):
Excellent Very Good Good Average Poor N/A

9. Communication and personal skills when interacting with students:
Excellent Very Good Good Average Poor N/A

10. Overall TA performance:
Excellent Very Good Good Average Poor N/A

If the instructor(s) have additional comments and recommendations, please attach them.

TA Signature: _____

Instructor Signature(s): _____

GRADUATE PLAN OF STUDY INSTRUCTIONS

GENERAL

You must submit a Plan of Study (POS) **before end of your second semester in your program**. Your POS is your plan for completing your entire degree. If your plans change after you submit your POS, you can submit an updated version at any time. Most graduate students revise their POS several times before they graduate. Awarding of the degree is based on satisfactory completion of Institute requirement and on satisfactory completion of all courses listed and approval of any transfer credits.

Submit an updated and revised POS every time you change your coursework or timeline. An incomplete or inaccurate POS will not be approved by OGE. All plans should be typed.

List all courses that will be applied toward the degree. For every course you list, indicate:

- **Course subject / number / title**
- **Credit hours received for the course** (Students should list these credits in *chronological order of registration*, and should stop listing credits once they have listed the minimum number required for the degree, even if they have earned additional credits beyond the minimum. *Please do not include 0 Credit courses such as ADMN 6700: Orientation Seminar for Grads.*)
- **Semester in which the course has or will be completed**; including the year (i.e. F 2017)
- **Whether the course is required, elective, transfer or waived**
- **Total number of credits** (which should be equal to the number of credits required for the degree: 30, 45, 60, 72, or 90 are the only possible credit totals)

TRANSFER CREDITS

If a course is listed as a transfer, the transfer credits **must be approved by the department and OGE and on file with the Registrar's Office** before they can be applied toward a degree. You should verify that the Transfer Credit Approval Form and an official transcript showing the completion of the course are on file with the Registrar's Office. Because the residence requirement for the master's degree is 24 credit hours, no more than six credits may be transferred toward the master's degree and they cannot have been used for another degree. Students in a doctoral program not applying a full Master's degree cannot transfer more than 24 credit hours toward a 72 credit hour degree and no more than 42 credits toward a 90 credit hour degree. Students cannot transfer courses from a completed degree earned outside of the Institute to their RPI Master's/PhD program.

WAIVERS

If a course is listed as waived, it must be replaced by another course to total the appropriate number of credits required for the degree. This does not apply for the M. Arch program.

MASTER'S DEGREE

The Plan of Study must contain 30 credit hours (45 for the MBA and 60 for the MFA) beyond the bachelor's degree with satisfactory grades.² At least half of the total credit hours presented toward the degree must have the suffix numbers 6000-7999, with the further limitation that no more than 15 credits of 4000-4990 courses are allowed (see program for other departmental rules). The master's degree must be completed within two and one-half years. Students enrolled in part-time and Advanced Professional Studies programs must complete the degree within three and one-half years. 2000 level courses cannot be applied towards a master's degree.

DUAL MASTER'S DEGREE

If you are receiving a dual degree, please list your other degree in the "Dual Degree" field. A POS must be filed simultaneously for both degrees. Please be aware that only six credit hours used for one master's can be applied to a second master's degree. **Courses being "shared" between the two degrees should be marked by an asterisk (*) after the course title.**

DOCTORAL DEGREE

The POS must contain 72 credit hours beyond the bachelor's degree (48 must be earned at Rensselaer with satisfactory grades). Some programs require 90 credits (48 must be earned at Rensselaer with satisfactory grades); please check individual departmental policies. In satisfying degree requirements, at least two-thirds of the total credit hours, excluding thesis, must contain the suffix numbers 6000-7999, with the further limitation that no more than 15 credit hours of 4000-4990 courses are to be allowed for a 72 credit hour doctorate or no more than 21 credit hours of 4000-4990 courses for a 90 credit doctorate. The degree must be completed within seven years (five years if entering with a Master's degree) of the first course applied to the degree. 2000 level courses cannot be applied towards a doctoral degree. For students entering a PhD program with a relevant Master's degree or who earn a Master's degree along the course of the PhD program: you may apply up to 24 credits toward your PhD for advanced standing. See restrictions for 4000-level courses. For Master's degrees from outside of the Institute, a copy of the transcript must be submitted to OGE with 6000-level courses and equivalent courses highlighted. Not all credits may be applicable to the two-thirds rule if not at the 6000 level.

NOTE

In addition to meeting the institute requirements, *the plan must adhere to all departmental regulations.*

After you complete the plan, sign it and meet with your adviser for his/her signed approval. After your adviser approves the plan, forward it to the appropriate person in your department for approval.

When the plan receives departmental approval, send the original to OGE. Upon OGE approval, a copy will be filed with the registrar's office.

²SATISFACTORY GRADES

The average of all grades used for credit toward an advanced degree must be B (3.0) or better. Courses with a D grade cannot be applied to a plan of study.

Visit <http://gradoffice.rpi.edu/update.do?catcenterkey=20> for most recent version.

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GRADUATE STUDENT REQUEST FOR CHANGE OF STATUS
OFFICE OF THE REGISTRAR
 Instructions on Back

Date: _____ RIN: 66 _____ Email: _____ Phone: _____

Part I

Print Name: _____
(First) (Middle) (Last)

Local Address: _____
(Street) (City) (State) (Zip)

Visa Type (if not U.S. Citizen, Permanent Resident or Refugee, circle one): F-1 F-2 J-1 J-2 B-2

Registrar's Office Use Present Status: _____ _____ Semester last registered: _____

Part II: CHECK APPROPRIATE BOX (ES)

Current Department _____

Change Degree Program (Circle Degree Program; write in Curriculum):

Leave: MArch MS MEng MBA DEng PhD Curriculum: _____

Enter: MArch MS MEng MBA DEng PhD Curriculum: _____

Add Additional Degree Program (Circle Degree Program; write in Curriculum)

MArch MS MEng MBA DEng PhD Curriculum: _____

Change Campus: From: _____ To: _____

Leave of Absence (Indicate what semester the change will be effective) _____

Return to Active Status: Last Active Term: _____

For what semester is this change to be effective? _____ Full-time or part-time? (Circle one): FT PT

Reason for change: _____

Student Signature: _____ Date: _____

PLEASE NOTE: IN ORDER TO OBTAIN GRADUATE EDUCATION SIGNATURE, A PLAN OF STUDY MUST BE SUBMITTED WITH THIS FORM

ACADEMIC APPROVALS	ACADEMIC CONDITIONS/DENIAL
_____ Present Graduate Program Director (Signature) Date Please print name: _____	<input type="checkbox"/> New Application: Check here if requiring a full application. <input type="checkbox"/> Denied: Check here if denying the request; please specify reasons for denial under Comments. _____ New Graduate Program Director Date Please print name: _____
_____ New Graduate Program Director (Signature) Date Please print name: _____	
_____ New Academic Advisor (Faculty Signature) Date Please print name: _____	
_____ Graduate Education Dean (Signature) Date Please print name: _____	
ADMINISTRATIVE APPROVALS	Comments: _____ _____ _____
_____ Medical Director (Signature) Date	
_____ International Student Services Date (If not US Citizen, Permanent Resident, or Refugee)	

Visit <http://gradoffice.rpi.edu/update.do?catcenterkey=20> for most recent version.

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INSTRUCTIONS ON BACK

TRANSFER CREDIT APPROVAL FORM

Office of the Registrar

- GENERAL TRANSFER CREDIT INFORMATION IS AVAILABLE IN THE CATALOG AND ON THE REGISTRAR'S WEB SITE.
- PLEASE SEE SPECIFIC UNDERGRADUATE AND GRADUATE STUDENT INSTRUCTIONS ON BACK.
- We strongly recommend that you obtain approval to transfer courses BEFORE you enroll at another institution.
- Transfer credit will be forfeited if a student takes an equivalent Rensselaer course.

Print Name _____

RIN # _____

Local Phone: () _____
Area Code Phone Number

RPI email Address: _____@rpi.edu

Expected Rensselaer Graduation Date: ____/____/____
(month) (year)

Institution Attended _____

Term you entered RPI: Fall Spring Summer Year: _____

Dates Attended: From ____/____/____ To ____/____/____
Month/Year Month/Year

Major(s) _____

If you have already completed the course(s) to be transferred, have you requested an Official Transcript be sent to the Rensselaer Registrar's Office? YES _____ NO _____

Is this transfer course(s) part of the last 30 credit hours of your Bachelor's degree?

YES _____ (If yes, you must obtain the approval of the Advising and Learning Assistance Center (see below) after obtaining other required signatures. A maximum of 8 credits may be approved.)

NO _____

UNDERGRADS: Visit the Transfer Course Guide (<https://sis.rpi.edu/rss/vhwwkwags.P.Web.Artic.Guide>) for RPI Equivalent information:

Course Number	Course Title	Semester Credit Hours	As Per Transfer Course Guide OR	Dept. Approval (if NOT in Transfer Course Guide) AND	Add to Transfer Course Guide?
At Visited College			Check box if course is in Transfer Guide: <input type="checkbox"/>	Print Name _____ and Sign _____	YES _____ NO _____
RPI Equivalent					
At Visited College			Check box if course is in Transfer Guide: <input type="checkbox"/>	Print Name _____ and Sign _____	YES _____ NO _____
RPI Equivalent					
At Visited College			Check box if course is in Transfer Guide: <input type="checkbox"/>	Print Name _____ and Sign _____	YES _____ NO _____
RPI Equivalent					

***Advisor Signature (required for ALL students):**

Student _____
 Advisor: _____
Signature Print your name campus address

***Undergraduates only, if transfer course is part of last 30 credits, only a maximum of 8 credits may be transferred:**

Advising & Learning Assistance Center _____
 (Academy Hall, Rm 4226) (Signature) Date

***Graduate Students only:**

Graduate Program Director _____
 (Signature) Date

Dean of Graduate Education _____
 (Signature) Date

Visit <http://registrar.rpi.edu/update.do?catcenterkey=29> for most recent version.



READINGS/INDEPENDENT STUDY REGISTRATION FORM GRADUATE STUDENTS ONLY

Office of the Registrar

INSTRUCTIONS: This form is due back to the Registrar by the Add Deadline printed in the Academic Calendar. Please make a photocopy for your own records. **Please allow 7-10 days for processing.**

GRADUATE STUDENT: Fill in Part 1. Have the instructor who will work with you complete Part 2. Your thesis or research advisor must complete Part 3 and the department's Graduate Program Director must sign Part 4. After obtaining the necessary signature submit this form to the Registrar's Office by the Add Deadline.

INSTRUCTOR: If you agree to work with the student on an Independent Study course, complete Part 2.

THESIS or RESEARCH ADVISOR: After signing and dating Part 3 return this form to the student.

GRADUATE PROGRAM DIRECTOR: Please sign and date Part 4 and return this form to the student who will submit it to the Registrar's Office.

PART 1: (To be completed by the Student)

Date: _____

Print Name: _____
(LAST) (FIRST) (MI)

Rensselaer ID #: ____ - ____ - ____

E-mail: _____ Day phone: _____

Term/Year: Fall _____ yr Spring _____ yr Summer _____ yr Session 1 ____ Session 2 ____ Session 3 ____

Subject Code (e.g. CIVL, MATH): [][][][][][]

Course Number: [6] [9] [4] [0] or [4] [9] [4] [0]
(Circle One)

OFFICE USE ONLY

CRN#: _____

Course Title: _____

(MAXIMUM 30 CHARACTERS INCLUDING SPACES AND PUNCTUATION)

Number of Credit hours for this independent study _____

Part 2: (To be completed by the Instructor)

Print Instructor's Name: _____
(Last name, first, initial)

Instructor's Signature: _____ Date: ____ / ____ / ____

Part 3: (To be completed by the student's advisor)

Print Thesis/Research Advisor Name: _____
(Last name, first, initial)

Thesis/Research Advisor Signature: _____ Date: ____ / ____ / ____

Part 4: (To be completed by the student Graduate Program Director)

Print Graduate Program Director Name: _____
(Last name, first, initial)

Graduate Program Director Signature: _____ Date: ____ / ____ / ____

Visit <http://gradoffice.rpi.edu/update.do?catcenterkey=20> for most recent version.



Rensselaer

Office of Graduate Education

Nomination of Master's Thesis Committee

Student _____ RIN _____

Current Address _____

City _____ State _____ Zip _____ Email _____

Semester You Intend to Graduate _____ Department _____

Degree MS MFA M. Arch. Chair _____

	Proposed Master's Committee	Department	Signature	Date
1.	_____	_____	_____	_____
	Committee Chair			
2.	_____	_____	_____	_____
	Committee Member			
3.	_____	_____	_____	_____
	Committee Member			
4.	_____	_____	_____	_____
	Outside Committee Member*			

***The Electronic Arts program requires a committee of 4 members: a Chair, 2 Arts faculty members, and 1 outside member.**

The department of _____ recommends the above Master's committee members. The student will conduct their thesis work with the noted faculty member as chair.

Graduate Program Director

Signature

Date

For information on giving the required Oral Presentation, please see next page for instructions.

OFFICE OF GRADUATE EDUCATION APPROVAL:

Signature _____ Date _____

OGE will send copies to: ___ Student ___ Registrar ___ Department

Admitted: _____
Anticipated: _____
Deadline: _____

(Revised March 2018)



Rensselaer

Office of Graduate Education

Record of Master's Thesis & Oral Presentation

Section I

Student _____ RIN _____ Department _____

Current Address _____

City _____ State _____ Zip _____ Phone _____ Email _____

Semester You Intend to Graduate _____ Please Check the Appropriate Box Thesis Project

Citation Style Used for References _____

Thesis or Project Title _____

Do you wish to delay the release of your thesis?

Yes No

Length of Time: _____

Reason: _____

Student Signature _____ **Date** _____

I hereby attest that the thesis/dissertation submitted is my own and I have completed this work in a manner consistent with the academic integrity policy of the Institute as given in the Student Handbook.

Section II

Section III

Date of Oral Presentation

Program/Institute Seminar

Presentation at Symposium/Conference

Traditional Defense

Print Name	Signature	Date
CHAIR SIGNS IN BOX BELOW		
_____	_____	_____
Committee Member 2	_____	_____
_____	_____	_____
Committee Member 3	_____	_____
_____	_____	_____
Outside Committee Member 4*	_____	_____

*The Electronic Arts program requires a committee of 4 members: a Chair, 2 Arts faculty members, and 1 outside member.

Section IV

I, as the above student's committee chair, certify that the above student has met the requirement for the oral presentation. (Please see attached announcement/schedule.) Both the thesis, including any revisions required by the committee after the presentation, and presentation meet my approval and that of the committee. Any delay of release has been agreed upon by the above student and myself.

Committee Chair Signature Date

OFFICE OF GRADUATE EDUCATION APPROVAL:

Signature _____ Date _____

OGE will send copies to: _____ Registrar _____ Department



Rensselaer

Office of Graduate Education

Nomination of Doctoral Committee

Student _____ RIN _____

Current Address _____

City _____ State _____ Zip _____ Email _____

Semester You Intend to Graduate _____ Department _____

Degree PhD D. Eng Advisor (If different from chair) _____

	Proposed Doctoral Committee	Department	Signature	Date
1.	_____	_____	_____	_____
	Committee Chair			
2.	_____	_____	_____	_____
	Committee Member			
3.	_____	_____	_____	_____
	Committee Member			
4.	_____	_____	_____	_____
	Outside Committee Member*			
5.	_____	_____	_____	_____
	Committee Member			
6.	_____	_____	_____	_____
	Committee Member			

***Please Note: One member must be outside of the student's graduate program.**

The department of _____ recommends the above doctoral committee members. The student will conduct their dissertation work with the noted faculty member as chair.

_____ Signature _____ Date _____

Graduate Program Director

OFFICE OF GRADUATE EDUCATION APPROVAL:

Signature _____ Date _____

OGE will send copies to: ___ Student ___ Registrar ___ Department

Admitted: _____

Anticipated: _____

Deadline: _____

(Revised March 2018)

Visit <http://gradoffice.rpi.edu/update.do?catcenterkey=20> for most recent version.



Rensselaer

Office of Graduate Education

Record of Candidacy Exam

Section I

Student Name _____ RIN _____

Current Address _____

City _____ State _____ Zip _____ Email _____

Department _____ Date of Exam _____

Section II

PLEASE PROVIDE COPY OF CITI PROGRAM COMPLETION REPORT. See instructions for more details. Indicate below the appropriate Content Series and Course agreed upon by your advisor:

Biomedical Sciences Humanities Social and Behavioral

Physical Sciences Engineering

Section III Complete and attach the Candidacy Exam Evaluation Rubric and indicate exam results below.

Recommendation of Examining Committee:

Passed Failed

Section IV

Print Name	Signature	Date
_____	_____	_____
Committee Chair	_____	_____
Committee Member	_____	_____
Committee Member	_____	_____
Committee Member	_____	_____
Committee Member	_____	_____
Committee Member	_____	_____

OFFICE OF GRADUATE EDUCATION APPROVAL:

Signature _____ Date _____

OGE will send copies to: ___ Student ___ Registrar ___ Department

Committee: _____

Anticipated: _____

Deadline: _____

(Revised January 2018)



Student Name _____

RIN _____

Exam Date _____

Candidacy Exam Evaluation Rubric

(To be completed by the committee chair. Please check boxes for all evaluation criteria that you feel are appropriate within each attribute category.)

Attribute	Does Not Meet Expectations	Meets Expectations	Exceeds Expectations
Overall breadth of knowledge <input type="checkbox"/> N/A	<input type="checkbox"/> Presentation reveals critical weakness in depth of knowledge in subject matter	<input type="checkbox"/> Presentation reveals some depth of knowledge in subject matter	<input type="checkbox"/> Presentation reveals exceptional depth of subject knowledge
Technical Depth <input type="checkbox"/> N/A	<input type="checkbox"/> Demonstrates rudimentary critical thinking skills <input type="checkbox"/> Does not reflect understanding of subject matter and associated literature	<input type="checkbox"/> Demonstrates average critical thinking skills <input type="checkbox"/> Reflects understanding of subject	<input type="checkbox"/> Exhibits mature, critical thinking skills <input type="checkbox"/> Exhibits mastery of subject matter and associated literature
Expected Contribution to discipline <input type="checkbox"/> N/A	<input type="checkbox"/> Limited expansion upon previous research	<input type="checkbox"/> Builds upon previous research	<input type="checkbox"/> Greatly extends previous research
Oral & Written Presentation <input type="checkbox"/> N/A	<input type="checkbox"/> Poor communication skills	<input type="checkbox"/> Good communication skills	<input type="checkbox"/> Excellent communication skills
Quality of response to questions <input type="checkbox"/> N/A	<input type="checkbox"/> Arguments are poorly presented	<input type="checkbox"/> Arguments are well organized	<input type="checkbox"/> Arguments are skillfully presented
Overall Assessment	<input type="checkbox"/> Does not meet expectations	<input type="checkbox"/> Meets expectations	<input type="checkbox"/> Exceeds expectations

Committee Chair	Signature	Date

Completed Rubric should be included with Exam Form and forwarded to OGE. Please provide a copy to the student and department.



Rensselaer

Office of Graduate Education

Record of Dissertation Exam

Student _____ RIN _____ Department _____

Current Address _____

City _____ State _____ Zip _____ Phone _____ Email _____

Date of Defense _____ Semester You Intend to Graduate _____ Degree PhD D. Eng

Citation Style Used for References _____

Dissertation Title _____

Student Signature _____ Date _____

I hereby attest that the thesis/dissertation submitted is my own and I have completed this work in a manner consistent with the academic integrity policy of the Institute as given in the Student Handbook.

Print Name	Signature	Date
CHAIR SIGNS IN BOX BELOW		
_____	_____	_____
Committee Member 2	_____	_____
_____	_____	_____
Committee Member 3	_____	_____
_____	_____	_____
Committee Member 4	_____	_____
_____	_____	_____
Committee Member 5	_____	_____
_____	_____	_____
Committee Member 6	_____	_____

Do you wish to delay the release of your dissertation?

Yes No

Length of time: _____

Reason: _____

I, as committee chair, certify that the above student has passed their dissertation defense and that any changes required by the examining committee have been made and approved. Any delay of release has been agreed upon by the above student and me.

Committee Chair Signature Date

OFFICE OF GRADUATE EDUCATION APPROVAL:

Signature _____ Date _____

OGE will send copies to: ___ Registrar ___ Department

(Revised March 2018)

Acknowledgement 1

I, _____, have read and understand the rules and regulations of the Mechanical, Aerospace and Nuclear Engineering Graduate Program.

Signature

Date

*Due at the end of your first term in the Mechanical, Aerospace and Nuclear Engineering Graduate Program.