

# Northwestern

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**CENTER FOR ADVANCED  
REGENERATIVE ENGINEERING**

## **RE-Training PhD Trainee Handbook**

**January 2023**



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## Introduction

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This handbook guides students through the requirements, procedures, and opportunities of study associated with the RE-Training Program in The Center for Advanced Regenerative Engineering and the Biomedical Engineering department at Northwestern University.

The program is funded by the **National Institutes of Biomedical Imaging and Bioengineering through grant T32-EB031527** that aims to offer the integrated curriculum, industrial, and clinical experiences needed to educate the next generation of thought leaders that are competent in the application of regenerative engineering to advance the field and practice of regenerative medicine.

On matters concerning Graduate School or University policy, the [Graduate School's Academic Policies and Procedures](#) or the [Northwestern Student Handbook](#) should be consulted.

While the handbook provides the basic information necessary for successfully negotiating the requirements of the Program, it is not meant to serve as a substitute for our advisory system. Students are encouraged to schedule frequent meetings with their mentors and program director to discuss their goals, options and plans, as well as progress in the Program.



Students are admitted to The Graduate School of Northwestern University in order to study in the Program. Students must follow all the procedures and guidelines established by The Graduate School for such matters as registration, receiving payment of stipends, ensuring full-time status in terms of graduate study, and meeting graduation deadlines. Staff within The Graduate School do their best to assist students in meeting requirements and deadlines. Do not ignore notices, requests or memos issued by The Graduate School (e.g. TGS E-News) to insure compliance with Graduate School procedures.

It is the students' responsibility to consult this handbook and seek out additional information so that they adhere to all required procedures, including those of the Program, Department, McCormick School of Engineering, Graduate School, and University. If there are questions or confusion, consult the Program Coordinator in CARE.

## Program Requirements

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To complete the RE-Training Program, students must fulfill the following requirements within the two-year duration of the program. Additional requirements following completion of the program will be detailed separately.

### Mentor Teams

Trainees are supported by individual 3-person Mentor Teams, which have primary and direct responsibility for trainee progress. Mentor teams must be identified and approved as part of the program application process, and must be comprised of one Northwestern faculty member from each of the following disciplines: Engineering, Life Sciences, and Clinical Practice. Within the Mentor Team, the trainee must identify two mentors that will serve as Ph.D. thesis advisors. These co-advisors must have diverse or complementary backgrounds and at least one of them must have a significant track record of training pre-doctoral candidates. The third mentor will be an additional resource to support the professional or regenerative engineering research growth of the trainee. A Thesis Committee, whose membership also includes the industry partner representative that will supervise the trainee during his/her RE-Practice School experience, will also monitor and guide trainee progress. The individual responsibilities of each mentor are as follows:

**Primary Preceptor Mentor** The primary mentor provides the trainee with laboratory space and office space as well as access to all equipment and facilities that are required to conduct the research project. The primary mentor must have significant experience training Ph.D. students (defined as having trained at least 4 Ph.D. students that pursued careers in research or academia). This requirement is waived for early career faculty members as long as a secondary or tertiary team mentor with a track record of pre-doctoral training experience is willing to co-advise the trainee. The primary mentor must prepare a training plan with the other two co-mentors (one of which should serve as graduate thesis co-advisor) and discuss this plan with the trainee. The plan must be mutually agreed upon. The primary mentor is expected to meet with the student weekly to provide immediate feedback on the aspect of the project that is consistent with the expertise of the primary mentor. He/she/they will provide professional insight, guidance on the recommended clinical and industry rotations based on the trainee's professional development goals and oversee the trainee's participation in RE-Training Program and CARE activities. This mentor will provide oversight for the student's academic course work in his/her area of expertise as well as ensure the trainee's development of in-depth transdisciplinary credentials.

**Secondary and Tertiary Mentors** These mentors must have expertise that is substantially different from that of the primary mentor and from each other and/or hold a primary appointment in a different department or discipline relative to the primary mentor (and each other). Depending on the project and upon agreement among the Mentor Team and the trainee, either the secondary or tertiary mentors may serve as co-advisor with the primary mentor for the trainee's thesis research. He/she/they should meet with the trainee at least once per month (weekly if a co-advisor) to provide feedback and guidance from their discipline's point of view. Either the secondary or tertiary mentor must host the trainee for at least 10 weeks (more is allowed) to provide the required cross-disciplinary training in laboratory, clinical, or computational techniques that must take place for convergence research to thrive. The time that the trainee spends with these mentors does not have to be continuous, but if so, relevant, and structured accordingly, it will count toward the biology or engineering immersion course requirements. These mentors should be able to offer the trainee, laboratory, office, and where applicable computational access as necessary for the trainee to complete his or her project in the cross-disciplinary topic.

**How Your Mentor Will Help You** The nature of the RE-Training Program guarantees that participants will be exposed to unfamiliar information and techniques on a regular basis. Your primary resource for navigating these challenges is your mentor team, and you should look at them as a resource as well as an assessment body. No requirement exists for the frequency of your meetings, but you are encouraged to schedule them often. A suggested meeting frequency would be to meet with your primary advisor weekly and the larger team every two to three weeks, allowing you to receive timely feedback on your research progress, take advantage of their expertise in tandem, and develop stronger working relationships. Mentors can also provide you with access to laboratory facilities, collaborators within and beyond their labs, and internships and other opportunities that can position you to pursue your research goals during and after the RE-Training Program. Many of your advisors will serve on your dissertation committee as well and should be viewed as long-term collaborators who you will have a unique opportunity to work closely with for years to come.

**Withdrawal and Removal of Mentors** The list of the preceptors will be reviewed bi-annually by the Executive Committee to evaluate the eligibility and performance of all preceptors and Mentor Teams. Faculty may request to be removed from the program due to sustained lack of funding, change of institutional affiliation, changing research focus, disability, or retirement. If withdrawal or removal occurs while his or her trainee is in the program, provided the trainee is making satisfactory progress towards the degree and the program's requirements, a plan will be put in place to protect the trainee's educational interests and minimize major disruption to the trainee's goals. If the preceptor is leaving the institution, the program director, with the help of the Executive Committee, will work with the trainee, former mentor, and the remaining Mentor Team to identify a suitable replacement. The program will continue to support the trainee under these circumstances. If substantiated complaints are filed by students against a particular preceptor and some form of disciplinary or remediation actions take place, the Executive Committee will review the case and make a recommendation to the program director. If the recommendation is to dismiss, no new trainees will be assigned to that preceptor and the program director will ask the preceptor to leave the program. Trainees supervised by a removed preceptor will be allowed to complete the program as described above. Preceptors will be asked to step down if they: a) refuse, without justification, to accept students that are interested in working with them for 3 consecutive years, b) undergo extended periods with lack of funding and/or publications of their research, c) show a pattern of failure of their advisees to make expected progress toward degree completion, and d) do not participate in the training activities.

## Required Coursework

To fulfill the following requirements, a total of five courses from the list below must be taken for a letter grade, including one course from each of the two elective sequences. Please note that one additional independent research course enrollment will be necessary to fulfill the laboratory immersion requirement, detailed in the next section.

### Required Courses

- BIOL\_SCI 391: Development and Evolution of Body Plans
- BMD\_ENG 407: Experimental Design and Measurement
- BMD\_ENG 495: Experimental Regenerative Engineering Laboratory

### Elective 1 - Choose 1

- BMD\_ENG 346: Tissue Engineering
- MBD\_ENG 347: Foundations of Regenerative Engineering
- BMD\_ENG 348: Applications of Regenerative Engineering

### Elective 2 - Choose 1

- BME 495-0-4: Pharmaceutical Engineering: From Discovery to Therapeutics
- MBiotech 410/BME 410: Technology Commercialization Fundamentals\*

\*This course is cross-listed with the Master's in Biotechnology program, with limited enrollment allowed for RE-Training program participants. This course is not currently approved for credit towards the general BME PhD program and would only fulfill your RE-Training requirement.

The Program Director may consider course substitutions to fulfill program requirements in exceptional circumstances. Please email the Program Coordinator should you wish to discuss such a situation.

## Immersion Experience in Biology & Engineering Research Laboratories

Students are required to complete a pair of 1-quarter immersive research rotations, which must be undertaken in separate biology and engineering laboratories. These immersion experiences can take place within the labs of the student's Mentor Team or one of the research laboratories of participating preceptors. Students are required to fulfill this requirement through the independent research course mechanism (BMD ENG 499), with a single quarter of enrollment required. The second rotation can be completed without a formal enrollment and requires only the verification of the trainee's rotation advisor (see Appendix A). Students can select laboratories from a list of participating faculty preceptors based on students' interests, must design and conduct independently a hypothesis-driven research project in biology, regenerative engineering, or translational medicine, and complete a research project report, which will be evaluated by the Mentor Team and the Executive Committee. This experience will qualify as a graduate independent research course.

## Clinical Immersion Experience

As part of the program's team science-based research training, all trainees must demonstrate that they have spent at least 6 cumulative weeks following and working with a clinical mentor in a topic area of relevance to the trainee's thesis project. Although the clinical rotation does not have to take place over a continuous period, it should be completed within the first year of appointment to the training program. The trainee, with the endorsement of the clinical mentor, must demonstrate to the program leadership, via a written report and an oral presentation, that significant immersion occurred. Through this mechanism the trainee will describe the new knowledge or perspective that was gained as a result of the clinical immersion experience. Trainees may witness surgeries, medical team discussions, communicate with the patient, all according to the standard rules and policies that would apply to a medical school student.

## RE Practice School

### Experience for Direct Exposure to Translational Challenges

CARE has secured partnerships with Vericel, Inc, Sigilon Therapeutics, Acuitive Technologies, Inc, Medline Industries, Inc, Dimension Inx, Rhaeos, and The United States Army Institute for Surgical Research to provide internships for the duration of the training program. CARE anticipates this list of partners to grow over time as the program continues. The industrial experiences will be carefully tailored to complement or relate to the student's thesis research as much as possible by including the industry and Army liaisons during the trainee selection process. Liaisons are part of the Executive Committee; therefore, we will be able to plan an integrated and relevant experience for the trainees and the Mentor Team.

The main goal of the internship is to expose the trainee to the skills that are required for development, scale up, and manufacturing of regenerative engineering products, thereby complementing the academic experience and informing the mentor and trainee teams of potential limitations to the applicability of their approach.

The internship is expected to last at least 3 months and will take place within the 2nd year of their appointment to the training program. Trainees will be required to produce a report to their Mentor Team and the Executive Committee upon their return to Northwestern and present an overview of their experience at the program's Student Research Forum.

### Expectations and Outcomes

Northwestern University's Center for Advanced Regenerative Engineering (CARE), housed in the Biomedical Engineering Department of the McCormick School of Engineering and Applied Sciences, is pleased to partner with industry liaisons to secure compensated internship positions for our National Institute of Biomedical Imaging and Bioengineering (NIBIB) training grant trainees. Below are requirements and outcomes of the internships, known as **RE-Practice School**.

#### Expectations

Trainees will work with their mentors, program director, and industry liaisons to plan an integrated/relevant experience for the trainee.

- 1) Content: tailor placement to complement trainee's thesis and professional goals
- 2) Timing: work with mentors on appropriate internship timing with coursework and clinical round requirements; plan ahead. Internships will last between 3 – 6 months, taking place in the trainees' 2<sup>nd</sup> year of the program appointment
- 3) Preparation: Mentors will review trainee cover letter, resume, and other material to help prepare trainees during their search
- 4) Progress: Trainee will continue to share progress with mentors

#### Outcomes

- 1) Trainees will be able to apply scientific, technical, and clinical knowledge and skills that will enable them to recognize and solve challenges associated with the restoration of tissue and organ function
- 2) Trainees will be exposed to the skills required for the development, scale up, and manufacturing of regenerative engineering products
- 3) As a complement to the academic experience, the RE-Practice School will inform the trainee and mentor team of potential limitations to the applicability of their research project approach
- 4) Trainees are required to produce a report to Mentor Team and Executive Committee upon return, and present orally an overview of their experience at the Student Research Forum

#### Resources

- 1) Pptx presentation template for report to Mentor Team and Executive Committee
- 2) Letter template for outreach/search

## Time Requirements

RE-Training is a two-year full-time program open to students already enrolled into either the Biomedical Engineering (BME) PhD Program or the Medical Scientist Training Program (MSTP) at Northwestern University and must have completed the first year of the BME PhD program or the second year of the MSTP program.

The Biomedical Engineering PhD Program ([BME PhD Handbook](#)), the Medical Scientist Training Program ([MSTP Curriculum](#)), and the Graduate School deadlines for completion of degree requirements extend beyond those of the RE-Training Program ([TGS section 12.7](#)). According to Graduate School rules, students entering the University with a bachelor's degree must complete all requirements for the PhD within 9 years. Because the RE-Training Program

accepts only full-time students, we expect students to complete the PhD within the guidelines outlined by our Program (see Degree Milestones for more information).

## RE-Training Certificate

Participants in the Regenerative Engineering Training Program are eligible to apply for a Certificate in Regenerative Engineering upon completion of the requirements detailed below. The certificate bestows formal recognition of competency in the subject area on a student's transcript and is typically awarded at the time of graduation. Requirements are intended to substantially mirror those of the RE-Training Program, and any student who wishes to pursue the certificate should apply to join the program first.

The certificate program is administered through [the Graduate School](#), and qualified participants must submit an [Application for Graduate Certificate](#) after all certificate requirements are met and before filing for graduation. Successful applicants must earn at least a 3.0 average GPA in certificate-related courses, and fulfill the Ph.D. program requirements of their home department. If you wish to pursue the certificate, please notify [mcccenters@northwestern.edu](mailto:mcccenters@northwestern.edu) of your intentions.

### Certificate Requirements

Applicants are required to complete at least five courses from the following list in order to be eligible for the certificate. Please note that the courses listed are broken down into five content areas, and completion of at least once course from all five is required to earn the certificate. For instance, completion of BMD\_346 OR BMD\_347 will fulfill the same course requirement, but completion of both does not provide applicants with additional credit towards the certificate.

Course Number	Course Name	Course Grouping
BIOL_SCI 391	Development and Evolution of Body Plans	Required
BMD_ENG 346	Tissue Engineering	Applicants may choose one of BMD_ENG 346, 347, and 348 to fulfill this requirement
BMD_ENG 347	Foundations of Regenerative Engineering	Applicants may choose one of BMD_ENG 346, 347, and 348 to fulfill this requirement
BMD_ENG 348	Applications of Regenerative Engineering	Applicants may choose one of BMD_ENG 346, 347, and 348 to fulfill this requirement
MBiotech 410/BME 410	Technology Commercialization Fundamentals	Applicants may choose one of BME 410 and BME 495-0-4 to fulfill this requirement. <b>Please note that enrollment in this course is limited, and must be arranged through the certificate program administrator</b>
BME 495-0-4	Pharmaceutical Engineering: From Discovery to Therapeutics	Applicants may choose one of BME 410 and BME 495-0-4 to fulfill this requirement
BMD_ENG 407	Experimental Design and Measurement	Required
BMD_ENG 495	Experimental Regenerative Engineering Laboratory	Required

## Other Activities

### Seminar Series

The department hosts two quarterly seminars. The Regenerative Engineering Highlight Seminar Series features both established and up-and-coming researchers in the fields of regenerative and biomedical engineering. The Regenerative Product Development Seminar Series hosts speakers with industry, business, or entrepreneurship experience to highlight translational and commercialization success and challenges.

Trainees have the opportunity to suggest visiting speakers, and to meet with researchers and experts in the industry. Attendance is required for all RE-Training students.

### **Symposium on Regenerative Engineering**

Hosted by [CARE](#), the Symposium on Regenerative Engineering is focused on the advances and challenges of regenerative engineering. Its intent is to foster community and a sense of mission to address the complex challenge of tissue and organ regeneration and reconstruction for all. This symposium, which will be held every two years, will bring together internationally recognized academic researchers, clinicians, industry leaders, and the community to Chicago to share experiences and set directions for the field and its stakeholders, including trainees of the program.

RE-Training Program trainees will also present their work and explain the new frameworks and language that they are acquiring and/or developing to meet their research goals and move the field forward.

The presentations will be in the form of:

- 1) A 10-minute oral presentation with powerpoint to the general audience
- 2) A poster presentation during the poster session breaks throughout the symposium agenda



### **Biweekly Student Research Forum**

The biweekly meeting will convene current RE-Training trainees with the program director and program coordinator. Students will have the opportunity to alternate presenting their current work to gain practice in discussing their research and receive feedback, and discuss any relevant program and activity items as a group. Attendance is required.

### **Regenerative Engineering Workshops**

Workshops will be planned that build on the Regenerative Engineering Skills Lab course and teach trainees state-of-the-art techniques and methods in regenerative biomaterials, stem cell and molecular biology, and data science/processing.

### **Science and Engineering Conferences**

Students are encouraged to attend national and international conferences in areas related to regenerative engineering, including stem cell and developmental biology, cell signaling, molecular and cellular regenerative engineering, tissue engineering, biomaterials, drug-delivery, nano-technologies, nano-medicine, and biomedical engineering. Trainees may have the opportunity to conferences to present or represent the RE-Training Program at a CARE sponsored booth.

Each student has a budget from NIBIB for travel each year. Consult with the Program Coordinator for amounts each year. Travel funds may also be used to travel to the required internship (see RE-Practice School).

## **Program Milestones**

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### **Year One**

#### **Individual Development Plan**

Students will submit a plan by quarter that maps their course, research, immersion, and internship plans by quarter for the 2 years as trainees. Mentors and program director will review. An updated plan will be submitted at the start of year 2.

#### **Establishment of PhD Thesis Project (1 Year)**

#### **Submission and Approval of Project Reports to the Thesis and Executive Committee (End of 1st Year)**



## Year Two

**Updated Individual Development Plan**

**Completion of All Course Requirements with a Cumulative GPA of 3.0 (15 months)**

**Completion of the Clinical Immersion Requirement (15 months)**

**Completion of the Industry Immersion Requirement (Within Year 2)**

**Submission and Approval of Project Reports to the Thesis and Executive Committee (End of 2<sup>nd</sup> Year)**

**Submission of 1 Manuscript for Peer Review (Within Year 2)**

## Year Four

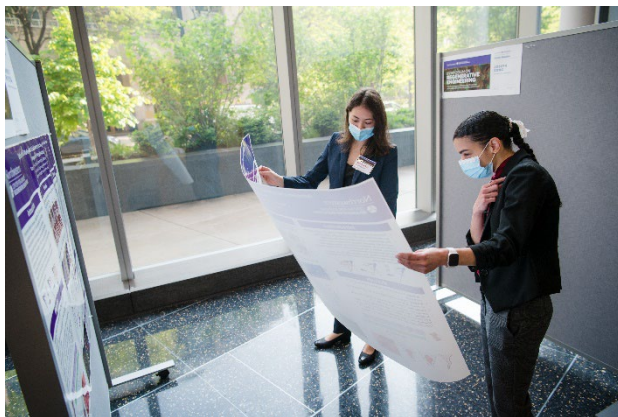
**Completion of Thesis Project**

**Publication of Research Outcomes in a Peer-Reviewed Journal**

## Year Five

**Graduation**

## Monitoring Academic Progress



### **Mentor Team**

Applicants are required to assemble a three-member mentor team, composed of a Northwestern faculty member undertaking research relevant to their own proposed project in each of the following areas: Engineering, Life Sciences, and Clinical Practice. One of these three mentors should be identified as the applicant's primary mentor. A full list of participating faculty members can be found on the RE-Training Program website. Additional faculty members who demonstrate expertise in a field relevant to the program's requirements are eligible to be considered as part of a prospective student's application.

This team will also form the nucleus of the applicants' eventual Thesis Committee, and additional members (such as a relevant industry mentor at one of CARE's RE Practice School partners) should be considered.

Trainees and mentors will be expected to hold regular meetings to discuss trainees' work and progress. Mentors will be provided copies of the trainee individual development plans. Mentors, trainees, and program director will meet at least once annually.

## Financial Support

### Financial Aid

Trainees receive support for stipend and tuition for the duration of the RE-Training Program (8 quarters). Funding is provided from the **National Institutes of Biomedical Imaging and Bioengineering through grant T32-EB031527**.

**TGS Travel Grant:** The TGS Conference Travel Grant provides funds to assist PhD students traveling to conferences and/or seminars on behalf of the University. The award is not intended to support attending courses at other schools, research or general educational travel. TGS permits students to make use of this program twice during their careers at Northwestern. The IEMS Department will provide an equivalent amount in matching funds for one TGS approved use of the grant during their first five years in the program.

**T32 Travel Budget:** Each trainee is provided a small travel budget each year from the funding grant. Please consult with the Program Coordinator for the amounts and when planning travel to relevant and approved conferences (see Science and Engineering Conferences) or travel to and from the RE Practice School required internship.

**Dependent Care Grant:** The TGS Dependent Care Grant provides funds to assist PhD students, with dependents, so that they may participate in professional development opportunities. Please refer to the TGS website for application deadlines and eligibility requirements.



The RE-Training funding grant **T32-EB031527** has available funds for dependent care. Please consult with the Program Coordinator for details.

## Student Affairs

### Academic Integrity

#### Academic Integrity Policy

The following academic integrity policy applies to all PhD courses in the Department of IEMS, unless the instructor specifies an alternative policy in writing.

**No sharing of course materials:** Students may not receive course materials of any kind, except from the instructor. Students who have previously taken a course may not give course materials to students who have not yet taken the course. Course materials include, but are not limited to: homework assignments, homework solutions, examinations, examination solutions, and lecture notes.

**Submitting One's Own Work:** Unless the instructor's alternative policy forbids it, it is permitted to collaborate on homework problems with other students who are enrolled in the course at the same time. Unless the instructor's alternative policy allows it, it is forbidden to collaborate on any other submissions that affect the course grade. It is also permitted for students to receive assistance in learning the subject matter from others. However, students may not receive assistance on their assignments from anyone who is not involved in the course currently, including students who took the course previously. Students may not show written solutions or computer programs to other students, nor may they look at others' written solutions or computer programs. Mere similarity of the homework submissions of students currently enrolled in the course is not evidence of a violation of this policy, because it can arise from legitimate collaboration.

**Examinations:** During examinations, students may not discuss anything in the examinations with anyone other than instructor. This includes take-home examinations. "During the examination" means between the

time the examination has been distributed and the time the examination is due, including any extension of time to complete the exam.

**Plagiarism:** Northwestern University's Principles Regarding Academic Integrity define plagiarism as "submitting material that in part or whole is not entirely one's own work without attributing those same portions to their correct source." Plagiarism is forbidden in any work that students submit for courses, as well as in research. Students may submit work that relies on published sources, but they must cite these sources correctly. The Office of the Provost and The Writing Place have provided guidelines for avoiding plagiarism.

**Do Not Suggest Violating the Rules:** It is a violation of this policy to ask others to violate the rules in this policy or to offer to violate them.

**Clarification:** A violation of this policy is not excused if a student misinterpreted the policy.

**Adjunction:** Allegations of academic dishonesty are referred to The Graduate School, whose process for handling them is found at here. This applies to those who provide help to others in violation of the policy as well as those who receive help in violation of the policy.

**Reasons for the rules:**

- Sharing course materials may interfere with accurate assessment by the instructor; an example in the lecture notes one year may become a homework problem another year. Sharing course materials among students may create unfair disadvantages for students who do not have access to materials that some of their peers have. Instructors should provide students with adequate study materials, including practice exam problems. Students who want more course materials to assist in their studies should ask the instructor directly.
- Voluntary collaboration on homework among students enrolled in a course is encouraged because it often helps learning. However, it is not collaboration when a student uses written solutions or computer programs prepared by someone else. It is also not collaboration when a student gets help from someone who is not involved in the course. It is beneficial when others in the University help a student learn, but receiving help on any graded submissions from someone who is not involved in the course can too easily undermine the learning that takes place when working on them. Students who need help that they cannot get from voluntary collaboration with other students in the course should get help from the instructor in office hours. Instructors usually want to evaluate students' submissions other than homework (e.g., projects, reports) on the assumption that they represent independent effort, but instructors may sometimes choose to allow collaboration on such submissions.
- Examinations are a very important part of the instructor's evaluation of the student's learning. Any communication with others during the exam calls into question the integrity of the evaluation.
- The ability to cite others' work appropriately is an important professional skill, and plagiarism is a serious form of professional misconduct. Students must practice appropriate citation consistently, in coursework as well as in research.
- Behavior such as asking to see another student's homework solutions or offering to help another student on a take-home examination damages the department's culture of academic integrity. It makes honest students fear that their honesty puts them at a disadvantage, and it tempts students to break the rules by making them suspect that others are breaking the rules.
- A student who is uncertain about whether something is permitted under this policy should not do it until he or she has learned that it is permitted by consulting with the course instructor or with the Director of Graduate Studies.
- It is the policy of The Graduate School to investigate and adjudicate alleged violations of academic honesty involving its students.



## Leave of Absence

### General Information

Leaves of absence are defined as a temporary separation from the University for a minimum of one quarter and a maximum of one year. For more information, please review the TGS [Leave of Absence Policy](#).

## Childbirth Accommodation

### General Information

The Graduate School's childbirth accommodation policy applies to enrolled (active) women graduate students prior to or following the birth of a child. Graduate students who meet this requirement and wish to use the Childbirth Accommodation should refer to [here](#) for more details regarding the Childbirth Accommodation.

## Nondiscrimination Statement

### General Information

Northwestern University does not discriminate or permit discrimination by any member of its community against any individual on the basis of race, color, religion, national origin, sex, pregnancy, sexual orientation, gender identity, gender expression, parental status, marital status, age, disability, citizenship status, veteran status, genetic information, reproductive health decision making, or any other classification protected by law in matters of admissions, employment, housing, or services or in the educational programs or activities it operates. Harassment, whether verbal, physical, or visual, that is based on any of these characteristics is a form of discrimination. Further prohibited by law is discrimination against any employee and/or job applicant who chooses to inquire about, discuss, or disclose their own compensation or the compensation of another employee or applicant.

Northwestern University complies with federal and state laws that prohibit discrimination based on the protected categories listed above, including Title IX of the Education Amendments of 1972. Title IX requires educational institutions, such as Northwestern, to prohibit discrimination based on sex (including sexual harassment) in the University's educational programs and activities, including in matters of employment and

admissions. In addition, Northwestern provides reasonable accommodations to qualified applicants, students, and employees with disabilities and to individuals who are pregnant.

Any alleged violations of this policy or questions with respect to nondiscrimination or reasonable accommodations should be directed to Northwestern's Office of Equity, 1800 Sherman Avenue, Suite 4-500, Evanston, Illinois 60208, 847-467-6165, [equity@northwestern.edu](mailto:equity@northwestern.edu).

Questions specific to sex discrimination (including sexual misconduct and sexual harassment) should be directed to Northwestern's Title IX Coordinator in the Office of Equity, 1800 Sherman Avenue, Suite 4-500, Evanston, Illinois 60208, 847-467-6165, [TitleIXCoordinator@northwestern.edu](mailto:TitleIXCoordinator@northwestern.edu).

A person may also file a complaint with the Department of Education's Office for Civil Rights regarding an alleged violation of Title IX by visiting [www2.ed.gov/about/offices/list/ocr/complaintintro.html](http://www2.ed.gov/about/offices/list/ocr/complaintintro.html) or calling 800-421-3481. Inquiries about the application of Title IX to Northwestern may be referred to Northwestern's Title IX Coordinator, the United States Department of Education's Assistant Secretary for Civil Rights, or both.



## Program Leadership, Faculty, and Staff

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Director of the Regenerative Engineering Training Program

**Guillermo Ameer**

### Executive Committee

**Guillermo Ameer**  
**Nathan Gianneschi**  
**Josh Leonard**

**Joseph Leventhal**  
**Shu Q Liu**  
**Amy Paller**

### Advisory Board

**Gilda Barabino**  
**Sujatha Karoor**  
**Cato Laurencin**

**Raphael Lee**  
**Laura Niklason**

### Preceptors

**Guillermo Ameer**  
**Ange-Therese Akono**  
**Vadim Backman**  
**Earl Cheung**  
**Jaehyuk Choi**  
**Vinayak P. Dravid**  
**Gregg Dumanian**  
**Mark K. Eskandari**  
**Colin K Franz**  
**Robert D. Galiano**  
**Nathan Gianneschi**  
**Mark C Hersam**  
**Karen J Ho**  
**Bin Jiang**  
**Sumanas W Jordan**  
**Neha Kamat**  
**John Kessler**

**Joseph Leventhal**  
**Akihiro J Matsuoka**  
**Chad Mirkin**  
**Milan Mrksich**  
**R Kannan Mutharasan**  
**Teri Odom**  
**Amy Paller**  
**Duc Thinh Pham**  
**Susan E Quaggin**  
**Jonathan Rivnay**  
**John Rogers**  
**Evan Scott**  
**Cheng Sun**  
**Igal Szleifer**  
**Edward Thorp**  
**Shuai (Steve) Xu**

### Staff

**Barbara Kassner**  
Program Coordinator

**Stephen Pedersen**  
Program Coordinator

**Eunae Jo**  
Director of Operations

**Appendix A:**

## Research Rotation Verification Form

This form verifies that the trainee has completed a non-credit research rotation, as specified on page 5 of the Regenerative Engineering Training Program Student Handbook. Completed forms must be signed by the student and rotation advisor, and submitted to the training program coordinator at [Barbara.kassner@northwestern.edu](mailto:Barbara.kassner@northwestern.edu).

Trainee Name \_\_\_\_\_

Rotation Mentor \_\_\_\_\_

Rotation Quarter(s) \_\_\_\_\_

Which core discipline does this rotation cover (circle or highlight one)?

Engineering

Life Sciences

Brief description of the trainee's work and progress during the rotation quarter

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I certify that the above listed trainee has completed a one quarter laboratory rotation in the laboratory of the above listed PI, and that their work was of sufficient quality to fulfill the program's rotation requirement.

Trainee Signature \_\_\_\_\_ Date \_\_\_\_\_

Rotation Mentor Signature \_\_\_\_\_ Date \_\_\_\_\_

Program Administrator Signature \_\_\_\_\_ Date \_\_\_\_\_