

Teaching Assistant and Graders Handbook
Engineering Sciences and Applied Mathematics

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1 Teaching Assistant Responsibilities

All students in the PhD program must complete at least one quarter as a teaching assistant (TA). The program considers teaching experience to be an essential part of a student's graduate education, it is a requirement set by The Graduate School and also by ESAM. Therefore, there is no exception to the teaching requirement.

A typical time commitment of a TA is 12–15 hours per week, depending on the course and instructor, and is not intended to entirely supplant research activities for the quarter. Student input is welcomed prior to when TA positions are assigned, and will be taken into consideration when assignments are made, but the priority is to assign students to TA positions where they will be the most successful and most beneficial for the needs of the department. If you are interested in being a TA for a specific course with a specific professor, you should discuss this with professor ahead of time, notifying them of your interest. The professor may relay that preference to the department chair prior to TA selections.

The precise description of the responsibilities for a TA varies with the course being taught and is always at the discretion of the faculty. Responsibilities typically include a combination of leading discussion sections, grading assignments and exams, and holding office hours. It may optionally include some opportunities to prepare and present a few lectures and create new assignments at the discretion of the faculty supervisor. For larger classes, most notably GEN_ENG 205-4 and MATH 228-2, where multiple TAs share the workload, one TA may be designated as the Head TA. The Head TA serves as a coordinator for the group of TAs by distributing the TA workload among the TAs in the group.

Every year, the ESAM faculty selects a graduate student who performs his/her TA duties outstandingly. The winner receives a certificate and a cash award.

In quarters that a student is acting as a TA, they must sign up for GEN ENG 546, a zero-unit course, for tracking purposes. Failure to sign up for these courses could jeopardize the student's ability to graduate.

2 Diversity, Inclusion, Anti-Racism, and Equity

TAs encounter and interact with a variety of faculty and students, and it is important to be understanding and respectful in these interactions. This section covers two types of differences you may encounter amongst faculty and particularly students: different types of learners and different types of backgrounds. We provide basic information on each subject as well as advice for the TA on how to interact with students of all types.

2.1 Different Types of Student Learning

As a TA you will encounter different types of learners, and you can cater to different student's learning goals and needs. A student's learning style may even change between classes, depending on their level of interest or skill level associated with a given class. Table 1 below lists the three types of student learners—surface, strategic, and deep—and how these learners work through a class as well as what they need from a TA for support through that process.

	Surface	Strategic	Deep
Intention	Cope with course requirements	Achieve high grades	Understand for oneself
Process	Memorize facts and procedures	Put consistent effort into studying	Relate ideas to previous knowledge
	Study with little reflection	Manage time well	Look for patterns and underlying principles
	Treat course as unrelated bits of knowledge	Focus on assessment requirements and criteria	Check evidence for conclusions
TA Approach	Transmit knowledge	Help connect concepts	Encourage conceptual understanding

Table 1: Different types of student learners and strategies for TAs for aiding each type. Biggs, 1999; Entwistle, 1997; Entwistle, 1991 (in Bradford); Franson, 1977; Heikkilä & Lonka, 2006; Prosser & Trigwell, 1999; Trigwell, Prosser & Waterhouse, 1999; Vermetten, Lodewijks & Vermunt, 2001; Campbell *et al.*, 2001; Trigwell, 1999.

2.2 Different Types of Student Backgrounds

As a TA, you will find your classroom also filled with students of different backgrounds. Differences in background mean many things: culture and diversity; socioeconomic status; learning, physical, or mental disabilities/limitations/difficulties; and different technical backgrounds. It is important to understand and respect all students and strive to practice teaching in a way that fosters an equitable environment to ensure all students feel accepted and are able to succeed. Table 2 below offers basic examples of these differences and how you as a TA can ensure that you are respecting all your students and serving as the best resource possible.

3 Teaching Assistant Resources

3.1 Searle Center

The Searle Center for Advancing Learning and Teaching has a wealth of resources for faculty, graduate students, and undergraduates to enhance learning and teaching. Specifically, for graduate students and post-docs, The Searle Center offers various programs and services:

- [Graduate Student Teaching Conference](#)
- [Teaching Certificate Program](#)
- [Graduate Teaching Mentors](#)
- [Graduate Teaching Fellows](#)
- [Feedback on Teaching](#)

- [Center for Integration of Research, Teaching and Learning \(CIRTL\) at Northwestern](#)
- [Workshops on Teaching and Learning](#)

You can find general information on the Searle Center at the following link:

<https://www.northwestern.edu/searle/initiatives/grad/workshops.html>

3.1.1 Teaching Strategies and Materials

Searle provides a list of teaching resources here on a variety of topics such as teaching strategies and materials and assessments of student learning:

<https://www.northwestern.edu/searle/resources/index.html>

Searle also provides materials on teaching strategies including:

- Diversity in the classroom
- Course design
- Teaching methods
- Teaching and learning with technology
- Grading and assessment
- Evaluating courses and instruction

You can find these resources and more at the following Searle Center link:

<https://www.northwestern.edu/searle/resources/teaching-strategies-materials.html>

3.1.2 Inclusive Teaching Practices and Resources

Searle also provides resources on fostering including learning environments here:

<https://www.northwestern.edu/searle/initiatives/diversity-equity-inclusion/inclusive-learning-environments.html>

They also provide a list of campus resources here, including AccessibleNU, Counseling and Psychological Services (CAPS), LGBTQIA+ Resources, and Office of Institutional Diversity and Inclusion:

<https://www.northwestern.edu/searle/initiatives/diversity-equity-inclusion/campus-resources.html>

3.2 Center for Integration of Research, Teaching, and Learning (CIRTL)

The Center for Integration of Research, Teaching, and Learning is a national network of universities focused on developing future faculty. There are on-campus events at Northwestern, including Mentored Discussions

of Teaching, Searle Teaching-as-Research Program, and CIRTl Workshop Series. You can also connect online through journal clubs, workshops, and courses hosted by CIRTl. You can find their resources here:

<https://www.northwestern.edu/searle/initiatives/grad/cirtl/index.html>

3.3 AccessibleNU

AccessibleNU is Northwestern’s office dedicated to equal access to education and university life. Through this office, you or your students can receive academic and exam accommodations. You can find out more about their resources here:

<https://www.northwestern.edu/accessiblenu/>

3.4 Student Enrichment Services

Northwestern’s Student Enrichment Services partners with first-generation, lower-income, and/or DACA/undocumented students to foster identity development, navigate campus resources, and build community. You can find their resources here:

<https://www.northwestern.edu/enrichment/index.html>

<https://www.northwestern.edu/enrichment/resources/top-ten-list-of-resources-for-fgli-students.html>

3.5 Title IX Responsible Employee

As a TA, you are a “responsible employee,” meaning that you are required to report all allegations of discrimination and sexual misconduct (including sexual assault, sexual exploitation, dating violence, domestic violence, stalking, and sexual harassment) to the Title IX coordinator in Northwestern’s Office of Equity. This includes incidents that happened off-campus involving a member of the Northwestern community.

The Title IX FAQs offers suggestions of how to talk about your reporting obligation as a responsible employee before an incident is disclosed to you and resources of how to report. You can find resources about Title IX and reporting sexual misconduct here:

<https://www.northwestern.edu/sexual-misconduct/title-IX/faqs.html>

https://www.northwestern.edu/sexual-misconduct/docs/ReportingResponsibilities_092418.pdf

3.6 How to Book a Room

As a TA, one of your responsibilities may be to book a room for office hours. This can be done through 25Live for any room at Northwestern or through Mudd Library specifically.

3.6.1 25Live

You can book rooms in any building on campus through 25Live. You can specify the date, number of people, whether or not the event recurs, and other useful specifications. This can be useful if you are in charge of booking rooms for office hours. You can use the following link to book rooms:

<https://25live.collegenet.com/pro/northwestern#!/home/dash>

3.6.2 MUDD

You can also book rooms in Mudd Library. These are more useful for smaller groups, but there are a few larger rooms. You can use the following link to book rooms:

https://northwestern.libcal.com/booking/mudd_group

3.6.3 Lightboard

The Lightboard is located in the Lightboard Studio in Mudd Library. The Lightboard is a piece of technology where you can record yourself writing, as if on a white board, but the board is clear and when the video is processed, it will show you behind the board and flip the writing automatically to be readable to the audience. Alternately, you can project PowerPoints and animate in things as you wish.

This can be a great way to provide extra resources for students outside of the classroom, such as examples of working through problems or explanations to concepts.

You can sign up for the Lightboard Studio as you would other rooms in Mudd using the link below.

<https://digitalllearning.northwestern.edu/article/2016/04/12/lightboard-studio>

4 Grader Responsibilities

Graduate and undergraduate students are eligible to be graders for a course, subject to approval by their thesis advisor (for PhD students) or course advisor (for MS students). This is an optional paid activity that is in addition to whatever other forms of support currently being supplied. For PhD students, being a grader **must not be at the cost of reduced effort on research or TA responsibilities that is supporting the student**. Serving as a grader does not qualify the student as having completed the TGS required quarter of TA service. Faculty wishing to utilize a grader for their course must recruit graders on their own. Students interested in being a grader should watch their email near the beginning of each quarter for faculty soliciting for help. When a student is to be hired as grader, the faculty member will notify the business administrator of the arrangement, and the student will work with the business administrator to make sure all the necessary paperwork and reporting requirements are set up.

Graders are paid a flat rate for the quarter for a maximum of 15 hours of work per quarter (average of 1.5 hours/week). MS students and undergraduates hired as graders must report their hours through Kronos, see

the department business administrator for assistance. PhD students are not required to report their hours but are also limited to a maximum of 15 hours per quarter.

5 ESAM Courses and Descriptions

Table 3 below lists the courses for which TA's are regularly assigned. There are often occasions where TA's are requested from the MATH department. In those instances, TA's are assigned to a course in the MATH department with a faculty from that department. When that occurs, you will be contacted by the MATH department undergraduate teaching coordinator for assignment.

	Culture & Diversity	Socioeconomic Status	Learning, Physical, or Mental Disabilities / Limitations / Difficulties	Technical Backgrounds
Examples	<p>Different personal boundaries or methods of social engagement</p> <p>Different political affiliations, ethnic identities, sexual identities</p> <p>Different ways of relating to other students or the professor</p> <p>Language barriers</p>	<p>Different family backgrounds related to education, income, and occupation</p> <p>Varying access to resources</p>	<p>Difficulty with certain physical tasks, such as moving, writing, seeing, hearing, etc.</p> <p>Difficulty with reading, learning, or focusing</p> <p>Difficulty with emotional and mental states or taking care of oneself, such as anxiety or depression</p> <p>Chronic medical conditions, such as chronic pain, skin conditions affecting appearance, etc.</p> <p>NOTE: not all of these are visible, and these can be identities much like sexuality and race</p>	<p>Different levels of knowledge of each subject (based on quality and type of school attended previously, or even based on who taught a previous course required for the one you're a TA, or if elective vs. core course)</p> <p>Masters and PhD students especially, as many come in with different undergraduate degrees</p>
TA Approach	<p>Don't make assumptions about what students are like, have experienced, have access to, or need/don't need</p> <p>Ask yourself why are you making that assumption about a student? Is it a personal bias?</p> <p>Adapt your way of communicating and relating to each student to respect boundaries</p>	<p>Don't make assumptions about ability to access resources (e.g. stable internet, computers, textbooks, food, secure places to live)</p> <p>Share university resources (Student Enrichment Services) to promote student success and meet needs</p>	<p>Don't make assumptions about what students can do</p> <p>Don't single out a student with a disability. Be patient, provide help when asked or offer when appropriate</p> <p>Be conscious of ableism– Can all my students do this problem/activity I'm proposing? Can you offer something in multiple forms to ensure everybody can access it equally?</p> <p>Be careful with how you talk about disabilities– Use these words as prepositions (e.g.: “a person with anxiety”, “a person with a learning disability”) to put the person first. They are not their disability</p> <p>Encourage use of Northwestern resources (if appropriate to bring up)</p>	<p>Don't make assumptions about what students know</p> <p>Explain relevant missing background to those that need it</p> <p>Adapt level of detail and scope of explanations to student needs</p> <p>Guide students through problems using guided questions</p>

Table 2: Different types of student backgrounds and how TAs should approach each type.

	Title	Description	Offered	Level
ES_APPM 252-1	Honors Calculus for Engineers	Multivariable differential calculus	Fall	Freshmen
ES_APPM 252-2	Honors Calculus for Engineers	Multivariable integral calculus	Winter	Freshmen
MATH 228-2	Multiple Integration and Vector Calculus	Multivariable integral calculus	Fall Winter Spring	Freshmen Sophomores
GEN_ENG 205-4	Engineering Analysis 4	Ordinary differential equations	Fall Winter	Sophomores
GEN_ENG 206-4	Honors Engineering Analysis 4	Ordinary differential equations	Spring	Freshmen

Table 3: List of ESAM courses for which TA's are usually assigned. The number of TA's assigned varies with the course. On rare occasions TA's can be assigned to other upper level undergraduate courses.