GRADUATE STUDENT MANUAL

Department of Materials Design and Innovation
University at Buffalo
Version 3.0: September 2026

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1. PREFACE

This Manual outlines the policies and procedures of graduate degree programs offered at the Department of Materials Design and Innovation. All graduate students must be familiar with these policies and procedures and abide by them. It is the responsibility of individual students to know and follow all such rules and policies, both of the Department and the University. Consequently, we require all graduate students entering the department to certify that they have read this Manual and will be responsible for conforming to its requirements. The student's advisor and the Director of Graduate Studies can help with questions about the program. The availability of advice does not abdicate the student of sole responsibility for completing necessary forms, initiating the formation of committees, honoring deadline dates at various points in his/her graduate studies, and meeting all departmental and graduate school regulations. Students should carefully read this Graduate Student Manual and the Graduate School Policies and Procedures (available on the Graduate School website at www.grad.buffalo.edu) as soon as they enter the program.

The policies and procedures in this manual were adopted by the Faculty of the Department of Materials Design and Innovation in November of 2022 and updated in 2026. The policies and procedures related to graduate study included in this manual are effective for all graduate students entering the Department of Materials Design and Innovation after January 1, 2023. The department reserves the right to modify the procedures and requirements outlined in this manual, and such modifications will not be considered retroactive. You should use the most up-to-date version of the manual. Should a student need special consideration regarding any of the policies or procedures outlined in this manual, they may contact the graduate director.

2. INTRODUCTION TO THE DEPARTMENT

The Department of Materials Design and Innovation (MDI) is an interdisciplinary department at the University at Buffalo that pushes the boundaries of traditional approaches in materials science research and education by emphasizing the data-driven perspective of materials discovery and design. MDI was established through the endowment from UB alumnus Erich Bloch, the former director of the National Science Foundation, Vice President of IBM, and Medal of Technology and Innovation holder. MDI is a unique program on materials informatics that links experimental and computational perspectives of materials science and engineering.

Department Mission: The mission of the Department of MDI is to train material scientists and engineers in the methods of data-driven discovery, design, and innovation. It is committed to accelerating science-based solutions to solve pressing societal problems such as climate change, environmental sustainability, and public health in a socially responsible manner.

Department Goals: The department's goal is to pioneer a unique learning and discovery framework involving the convergence of materials science and information science — Materials Informatics. Through the lens of data, we explore and discover connections between experiments and modeling for a deeper understanding of existing relationships to uncover information that is not easily detected by experiments or computational methods alone and to detect new trajectories of materials exploration that have not been recognized in the past.

The Department of Materials Design and Innovation is associated with The School of Engineering and Applied Sciences (SEAS) and the College of Arts and Sciences (CAS). Academically qualified students from all fields of science and engineering are welcome to apply.

3. GENERAL INTRODUCTION

The policies and procedures of the Department, the School of Engineering and Applied Science (SEAS), the College of Arts and Science (CAS), and the Graduate School of the University at Buffalo (UB) are listed below and can be found using following links:

- UB policy Library
- Policies for SEAS Graduate Students
- Graduate school policies
- Artificial Intelligence Guidance

The Director of Graduate Studies (DGS) exercises overall administrative responsibility for the graduate program. Students should consult with the DGS when the need arises. However, the students can approach the Director for Administration to acquire forms and signatures.

The department recognizes that some of its requirements and procedures may not apply to all graduate students and that, from time to time, a graduate student can have a legitimate and reasonable cause to not fulfill the department's requirements. Consequently, students must petition the Graduate Committee to grant exemptions or changes in certain requirements or procedures. All petitions to the Graduate Committee should clearly state the nature of the petition and offer a compelling justification for the request. The student's advisor must approve all petitions before being submitted to the Graduate Committee. The decision of the Graduate Committee is final in all matters of the Department of Materials Design and Innovation policies, procedures, requirements, and petitions.

Finally, **UB and MDI are strongly committed to fairness, merit-based opportunity, and a safe learning environment for everyone**. In accordance with federal and state laws, no person in a relationship with the State University of New York at Buffalo shall be subject to discrimination based on age, religion or creed, color, disability, national origin, race, ethnicity, sex, or sexual orientation, marital or veteran status. Any violations will not be tolerated. Students are encouraged to discuss and report (all details are kept confidential) any discrimination with faculty or staff observed within the department.

4. YOU ARE HERE! LET's GET YOU STARTED…

Welcome to MDI and UB!

MDI Graduate Committee is committed to helping each student on their path towards graduation; hence, the department's core faculty are always available to listen to the questions and concerns of the students. To initiate the process, the students are required to attend the orientation meeting held at the beginning of the Fall (entry) semester and those offered throughout the program. These meetings will help students to

1. understand the timelines and course activities throughout the graduate program.
2. prepare for MDI milestone assessments and monthly MDI-StuFF activities.
3. get information regarding opportunities for research and funding within the department.
4. guide the student through the selection process for a permanent advisor if continuing for a PhD.

Things to do upon your arrival:

1. Contact the Director of Administration to register for the first semester's classes – if you have not already done so before your arrival. Please note that all holds on your HUB account should be removed to be able to enroll in classes. Immunization records must be sent to the student health services. The review and approval of immunization records take a few weeks. Hence, please send the records in advance so your holds can be released before the semester begins.
   Student Conduct - Student Life Guide - University at Buffalo

1. International students registering for the first time should report to the Office of International Education in Talbert Hall, Room 210. This office advises on issues related to immigration and visa status. ISS hosts a mandatory orientation for international students.

2. All incoming students suggested attending the Graduate Student Orientation (SEAS) held before the first week of classes. Program-specific orientations will also be offered. Each orientation is mandatory for all students to attend.

3. Contact the MDI Graduate Student Association (GSA) and register as a member to enjoy the benefits of the GSA community.

All international students must maintain full-time status during their graduate studies at the University at Buffalo. If you have any questions, don't hesitate to contact the Department or Office of International Education.

Program Contacts

An academic advisor/mentor will be assigned on the first week of the academic year and will be your primary contact. The director for graduate studies will advise on all issues related to the academic program and professional development. The Director of Administration (DOA) will assist with student-related services such as course scheduling and registration and liaise between the graduate school, the Registrar's office, etc.

Director for Graduate Studies (DGS): Prof. Jung Hun Seo, junghuns@buffalo.edu

Director of Administration (DOA): Ms. Laurie Barszcz, laurieba@buffalo.edu

Important Links for Graduate Student Orientation:

1. **UB Rules and Regulations, Student Code of Conduct, Student Life Gateway, accessibility resources, Counseling Services:**
   Designed by Student Conduct and Advocacy
   Student Conduct - Student Life Guide - University at Buffalo

2. **Forms for Graduate Students:**
   Designed by Graduate School
   Forms for Students - The Graduate School at the University at Buffalo - University at Buffalo

3. **Estimated Cost of Attendance:**
   Designed by Graduate School
   Estimated Cost of Attendance - The Graduate School at the University at Buffalo - University at Buffalo

4. **Financial Aid:**
   Designed by Financial Aid
   Financial Aid Cost of Attendance – Financial Aid (buffalo.edu)

5. **SEAS Website:**
   School of Engineering and Applied Sciences - UB School of Engineering and Applied Sciences - University at Buffalo

6. **Registrar Website:**
   UB Office of the Registrar (buffalo.edu)

7. **UB Directory:**
   Search - University at Buffalo

8. **International Student Services:**
   International Student Services - University at Buffalo

5. MASTERS PROGRAM OVERVIEW

5.1 Program Objective

MDI Master's Program is designed to educate individuals with disciplinary knowledge in materials and data science. Students are trained to have interdisciplinary perspectives and develop the necessary skills and tools to be able to accelerate the pace of materials discovery and engineering design.

5.2 Learning Outcomes

- Students will have disciplinary knowledge in the areas of materials science and data science.
- Students will have the awareness and ability to query and work with databases in materials science.
- Students will acquire operational skills in statistics and data mining methods as applied to materials science.
- Students will have the ability to use computational methods in the analysis of experimental and/or simulation data.
- Students will develop relevant scientific literacy and the ability to communicate in written and verbal formats.

5.3 Master's Program Planning

The Department of Materials Design and Innovation currently offers a Master of Science (MS) degree in Materials Science and Engineering. The department does not offer specializations; hence, all students must proceed with similar options toward completing their degree. All students joining MDI will be assigned an ***Academic Advisor*** at the beginning of their program to help navigate through the academic and personal concerns that may influence performance. A schedule will be set up for the student to meet their advisor within the first 2 weeks of the beginning of each semester and resolve course requirements and backlogs. It should be noted that an academic advisor will be **independent** of your Project/Research advisor. The MDI Academic Advisor serves as a point of contact for any concerns that students may have. Full-time students must register for 12 credit hours (usually four courses) per semester for the first two semesters (Fall and Spring) and six credits for the Master's Project (which can be completed either in the Summer or Fall semester). See below for part-time status requirements, internship participation, and others.

Course Design: All Master's degree students joining the department are required to take the eight core courses (MDI501 – MDI508) in the specified order within the first two semesters. At the end of the spring semester, each student can choose a master's project (under the

supervision of two faculty advisors). **The eight core courses plus the Master's Project constitute the entire course requirement for graduation.** However, in certain cases, the time to graduate can be extended to account for individual learning ability and other unforeseen circumstances. However, this extension should not be automatically assumed; instead, the student must contact the graduate director and/ or head of the department as soon as possible so they can help determine a new timeline for graduation.

Fall Semester Compulsory Master's Courses

MDI 501LEC	Introduction to Materials Design and Informatics	3 credits
MDI 502LEC	Quant Structure-Property Relationship Materials	3 credits
MDI 503LEC	Thermodynamics & Molecular Structure of Materials	3 credits
MDI 504LEC	Multivariate Statistics & Materials Informatics	3 credits

Spring Semester Compulsory Master's Courses

MDI 505LEC	Computational Materials Chemistry and Physics	3 credits
MDI 506LEC	Kinetics, Microstructure, and Defects	3 credits
MDI 507LEC	Quantitative Methods in Materials Characterization	3 credits
MDI 508LEC	Experimental Design for Materials Development	3 credits

Summer/Fall Semester Master's Project

MDI 700TUT	Project Guidance	6 credits

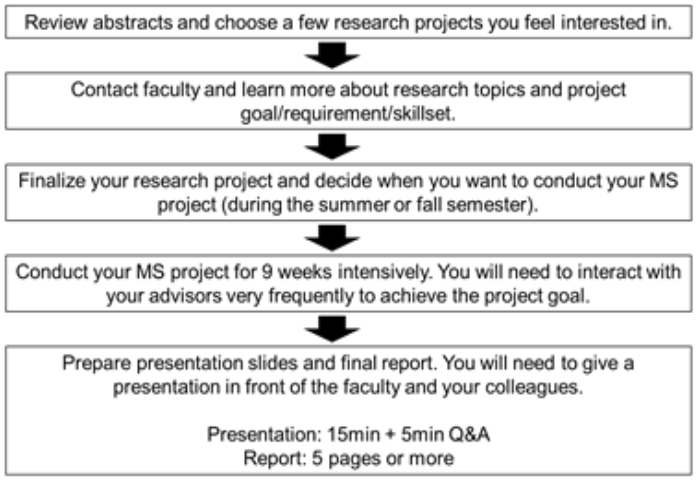
Details on compulsory project-based learning activities in the MDI Master's Program:

MDI Interconnect: MDI Interconnect is a fall-term (end of first semester) project-based learning activity designed with learning outcomes (a) to comprehend and connect concepts between various core courses taught in the fall semester, (b) to employ data science methods to accelerate approaches to develop process-structure-property relations of advanced materials. The end-of-the-semester projects are carefully designed by a cohort of teaching faculty (who participate in the first-semester teaching) and are assigned as team projects (team sizes consist of 3-5 students). The students work on the assigned projects for 3-3.5 weeks under the guidance of the faculty cohort. The last week of classes in the fall semester is exclusively assigned to project design and development. The students are evaluated based on their submitted reports, final presentations, and the learning outcomes rubrics.

MDI Master's Project (MDI 700): Upon completing all core courses, the students are eligible to conduct an MDI Master's project. The master project course (MS project hereafter) in MDI provides the opportunity to conduct a research-based project. These projects help strengthen students' ability to merge their knowledge in material sciences with data sciences based on the

eight core courses. MS projects are co-designed by two MDI faculties which address one or more of the following core scopes: (i) Material discovery and design, (ii) High throughput exploration and beyond, (iii) Quantitative structure-property relationships, (iv) Exploring and linking length scales.

The students will be given a list of project abstracts towards the end of the Spring semester and three weeks to select the project. The students are strongly advised to interact with faculty members to discuss the details of the project(s) they are interested in before making the final selection. MDI offers the MS project in the summer semester (June) and fall semester (September) to allow students to schedule their graduate study timeline. **When registering for the Master's Project, the students typically register for the major professor's section, MDI 700, for six credit hours.** The project faculty cohort makes all final decisions on the project details and duration (progress). At the end of the MS project, each MS project is evaluated *via* a 15-minute presentation, the final project report, and the learning outcomes rubrics by an evaluation team.



The step-by-step guidance of the MS project for students

A **Master's Project form** must be completed and signed by both the student and the leading faculty advisor. Once signed, the form should be emailed to the Director of Administration and the Director of Graduate Studies to facilitate enrollment in the course.

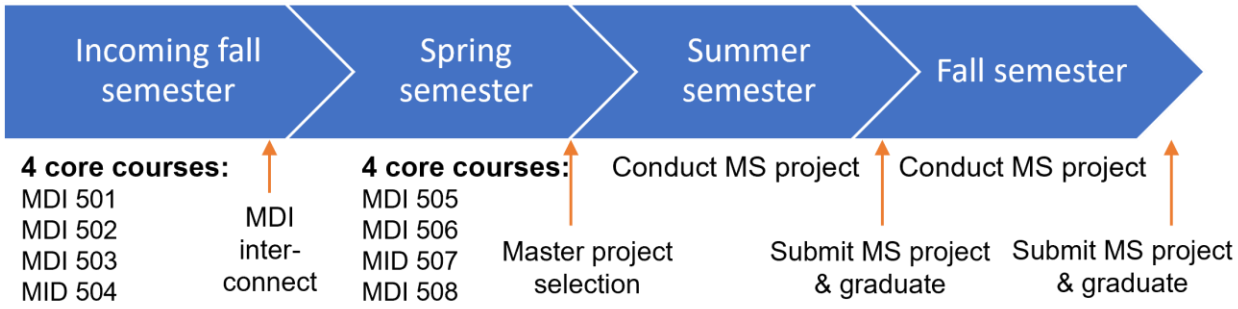
5.4 General Policies for Coursework

Undergraduate Courses: Graduate students may NOT take undergraduate courses for graduate credits (including undergraduate language courses) except certain 400-level courses by petitioning the DGS. Graduate students may find it desirable to audit selected undergraduate courses if their background in that area is weak.

Non-Department Courses: MDI carefully designs its core courses and master projects to provide interdisciplinary education and research experience in material design and engineering. Hence, the MDI graduate program does not recommend non-department courses and credit transfer into the master's program.

5.5 Timelines and Milestones for Master's Program

Timeline for a full-time, regular graduation cycle MS program:
Completion timeline: 12 to 16 months



The master's degree normally takes three semesters of full-time graduate study but must be completed within no more than four semesters unless a petition for an extension of time is approved in advance by the DGS to the Graduate School. This form is available on the Graduate School website at www.grad.buffalo.edu.

Reduced Course Load Form: In the final semester, students can reduce the course load (to less than 12 credits) while still maintaining full-time status. Every student should submit the Request Form for Full-time Certification for students pursuing master's Degrees or Advanced Certificates [Link]. This form can also be used to update the Expected Graduation Term. After obtaining signatures from your academic advisor and the DGS, submit the completed form to the Director of Administration.

The students who wish to receive an MS degree should apply for conferral in HUB and are also responsible for obtaining all necessary departmental signatures, documents, and a complete UB transcript with a minimum credit average of 3.0 to receive the degree. Please refer to the step-by-step guide on applying for conferral in HUB.

Graduation Term	Application Deadline	Conferral Date
Fall	October 15	February 1
Spring	February 22	June 1
Summer	July 15	August 31

+ Graduate School deadline dates are subject to change, so check the Graduate School website regularly for deadline dates once you have selected a degree conferral date.

Petition to Change/Add Degree type: Current PhD-Registered students can apply to add Master's Degree to their program using this [Link]. This will allow students to receive the master's

degree and participate in the Graduation Ceremony with fellow master's students after successful completion of Master's Program Requirements. Note that this form can only be filled and completed online along with DGS for approval.

5.6 Others (lab volunteering and internships)

Upon arrival at MDI, students can volunteer (without financial assistance) with a preferred faculty/research area. Students must approach the faculty regarding the possibility of becoming lab volunteers. The openings for paid research projects (per hour or by semester) or internships (from companies) will depend on the funding opportunities available with the MDI faculty. The faculty will advertise the positions, subject to their availability, to the students via email or in class. For internships outside UB, recommended only during the summer semester, the student must contact the DIRECTOR OF ADMINISTRATION and DGS on the nature and duration of the internship. The student has to file for a 1-credit CPT to remain as UB student while conducting the internship.

5.7 Continuous registration and leave of absence [Form]

All graduate students must register each semester (excluding the summer) until they receive their degree or request a leave of absence before the semester for which the leave is sought. Such leaves are granted by the Department (DGS) and the Committee of the Graduate School for compelling reasons. A student cannot be formally on leave during the semester preceding the award of their degree.

5.8 Part-time Students

Most students in the program are full-time students. In some instances, students may be admitted on a part-time basis. Students admitted on a part-time basis must fulfill the requirements as follows:

1. Completion of eight core course requirements within the **first two years**

2. The Master's Program must be completed **within three years** from the start of the course.

The timing of completion of additional requirements will be handled and approved by the Materials Design and Innovation Graduate Committee. Note that part-time students are NOT eligible for department funding

5.9 Grading Policy

Grades in courses applicable to the degree must be letter grades: A, A-, B+, B, B-, C+, C, D, F, and FX (never attended), carrying quality points of 4.0, 3.67, 3.33, 3.0, 2.67, 2.33, 2.0, 1.0, 0 and 0 respectively. *The Master Projects are graded as Satisfactory (S), Unsatisfactory (U), or Incomplete (I). Exclusive of "S" grades, grades earned in courses counted towards the Student's* ***M.S. program***

must average a "B" (3.0) grade point average or better *to be in good academic standing in the graduate program.*

MDI maintains a strict AI policy that defines the permitted use of AI/ML tools and large language model (LLM) platforms in course-related homework, assignments, quizzes, presentations, reports, and examinations. See Appendix 4 for details. Individual instructors may establish additional course-specific requirements or restrictions. Students must comply with both the MDI policy and instructor guidance and should consult the teaching faculty before submitting work that involves AI tools.

Incomplete Grades: For all graduate courses, an interim grade of incomplete (I/letter grade earned if incomplete is not satisfied) may be assigned if the student has not completed all requirements for the course. An interim grade of Incomplete (IU) shall not be assigned to a student who did not attend the course. The letter grade assigned to the incomplete will become the default grade of record if the incomplete is not changed through formal notice by the instructor upon the student's completion of the course within twelve (12) months after the close of the term for which the incomplete was assigned. The instructor may specify a shorter time frame for the removal of the IU grade.

Review of Academic Progress: At the end of each semester, the department will review the progress of all graduate students in the program. Students who are not making satisfactory progress will be notified by email and should meet with the academic advisor, Director of Graduate Studies, or Director of Administration to discuss the matter and confirm requirements for course registration in the following semester.

Probation: If a student's GPA falls below 3.0 at the end of any semester or the student receives a grade of D or F in any course, they will automatically be put on probation from the start of the next semester. They will be given a target to be reached to continue in the program. Normally, the target will be for the student to raise their cumulative GPA to 3.0 or higher by the end of the ongoing semester. If a student earns an F in any course, they will be required to retake that course and will be put on academic probation. Students may not be required to retake courses where they earn a C+, C, C-, or D, but the cumulative GPA must be at least 3.0.

Probation for other causes shall commence when the program director notifies the student in writing. The student will be given requirements for regaining good academic standing. Being on probation is grounds for withdrawal of academic and financial support, if applicable.

A student may be dismissed from the program if any of the following conditions apply:

- A grade of "F" is earned in any course that could be applied toward the degree.
- More than two grades are "C," "D," and/or "U" in courses that could be applied to the degree.

- Probationary status has not been removed after one semester or within the timeframe determined by the Program Director, as noted in the formal letter sent to the student.
- The cumulative GPA for courses that could be counted towards the degree falls below 3.0 at the end of any semester.
- The student is found guilty of academic dishonesty according to Graduate School regulations or AI Guidance (see Appendix 4).
- More than four resigned "R" grades have been obtained in courses that could be applied to the degree.

Students on probation are required to attend at least 70% of the repeat classes in person to demonstrate their commitment and progress. Additionally, students must meet with their academic advisor **at least twice** during the semester to discuss their progress and address any concerns. These meetings are crucial, as the academic advisor will provide essential recommendations regarding your continuation in the program.

Graduate students who do not meet the written terms of their academic probation may be academically dismissed from the program by the program director. Such dismissals shall be done promptly but no later than three weeks after the completion of the term. The Graduate School will be notified in writing of all such academic dismissals.

Tracking Your Academic Progress:
It is the student's responsibility to consistently track their academic progress throughout the program. This includes:

a. Registering for classes on time for the upcoming semester.
b. Adding or dropping courses before the permitted deadlines.
c. Ensuring that the correct courses are listed on their academic record.
d. Verifying that all grades are accurately posted at the end of each semester.
e. Maintaining an academic GPA of 3.0 or above.

Note that faculty, the graduate advisor, and the DGS **do not** have access to students' academic records. Therefore, it is crucial for students to verify that appropriate courses are registered and that final grades are posted.

Academic Integrity: You should be familiar with the university policies on academic integrity. The details are given at the end of this document, and the Policies for graduate students are also available at: Policy Library - The Graduate School at the University at Buffalo - University at Buffalo. Any violation of these policies, including but not limited to cheating on any course deliverable (e.g., homework project, exam, etc.), may result in automatic failure of the course.

Accessibility Resources: If you have a disability that requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources, 5

Norton Hall, Phone: (716) 645-2608, and also notify the instructor of the course. The office will provide you with information and review the necessary arrangements for reasonable accommodations.

Graduate Committee: The Graduate Committee for Master's students consists of the student's academic advisor, the Director of Graduate Studies (DGS), the Director of Administration (DOA), and the Head of the Department. This committee is responsible for making final decisions related to the student's probation, leave of absence, or program-related issues.

6. TRANSITION FROM MASTER TO DOCTORAL PROGRAM

6.1 Qualifying Exam/ PhD Comprehensive Exam

Any graduate student (whether registered as a master's or PhD candidate) who has completed the eight core courses is eligible to take the PhD comprehensive exam. Passing this exam is essential for continuing as a PhD candidate. The MDI comprehensive exam is specifically designed to assess the student's ability to integrate course material and apply their knowledge effectively to address physical concepts and solve analytical problems in materials science. The MDI comprehensive exam intends to test the

- ***Ability of the student to understand and apply the concepts*** learned in 8 compulsory MDI courses to a materials science/design problem.
- ***Ability of the student to use data science tools*** for a material science/design problem

The student has two opportunities to pass the exam:

- **First Attempt:** The first attempt can be taken immediately after completing the eight core courses, typically at the end of the Spring semester (3rd or 4th week of May).
- **Second Attempt:** If the student does not pass the first attempt, they may retake the exam at the end of the Fall semester, usually during the 2nd or 3rd week of December.
- **Third Attempt:** A third attempt is not permitted.

The exact exam date will be announced at least one month in advance, with results released within 15-20 days afterward. Students who pass the comprehensive exam in the Spring semester should continue with their Master's project during the summer or fall and work with their research advisor on transition to PhD program. Those who do not pass should complete their Master's project in the Fall semester and utilize the second attempt at the PhD comprehensive exam at the end of the Fall session. Students are strongly encouraged to engage with department faculty to select an appropriate advisor for continuing their PhD studies. This timeline also provides international students with sufficient time to file for OPT with immigration.

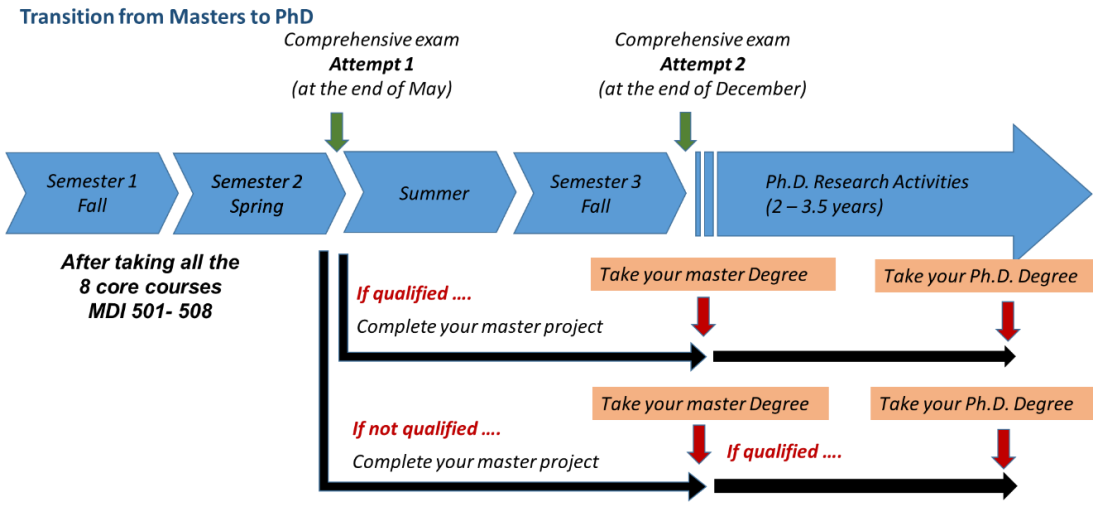
6.2 Exam Pattern

A comprehensive list of concepts (approximately 40-45) and some sample questions will be provided to students at least 1.5-2 months before the exam. These topics are curated by the teaching faculty involved in the MDI 501 to MDI 508 courses, offering focused guidance for exam preparation. Faculty members will be available for office hours (by appointment) at least one month prior to the exam date to assist students.

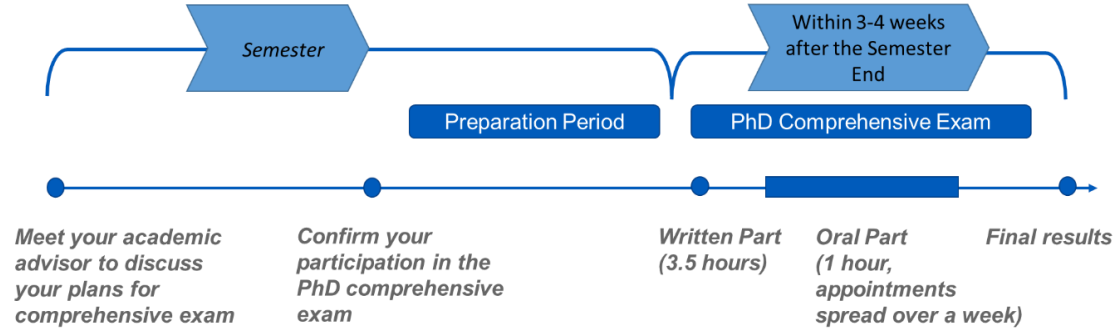
The exam is designed to holistically evaluate the student's comprehensive understanding of materials science and data science concepts. Students will take a 3.5-hour in-person written exam. However, an optional oral examination opportunity will be offered to students who

demonstrate relatively strong overall performance, defined as earning more than 80% of the available points on more than half of the exam questions. The oral examination is intended primarily to evaluate the student's level of understanding in subject areas where they received lower scores. It will consist of a 60-minute oral examination conducted before a committee of at least two to three faculty members per participant.

Timelines for the transition to PhD Program at MDI:



Preparatory timeline:



6.3 Selecting an Advisor [Form]

All incoming MDI students (Master's or PhD) follow the same course program. Students are encouraged to engage with any MDI faculty through discussions or lab volunteering during the program to identify a potential supervisor. Funding and lab volunteering activities are at the discretion of the advising faculty. After passing the PhD comprehensive exam, students must secure an advising faculty member to continue registering for PhD research credits. The graduate advising form must be completed and submitted to the Director of Administration in MDI to enroll for the following semester.

7. DOCTORAL PROGRAM

7.1 Program Overview

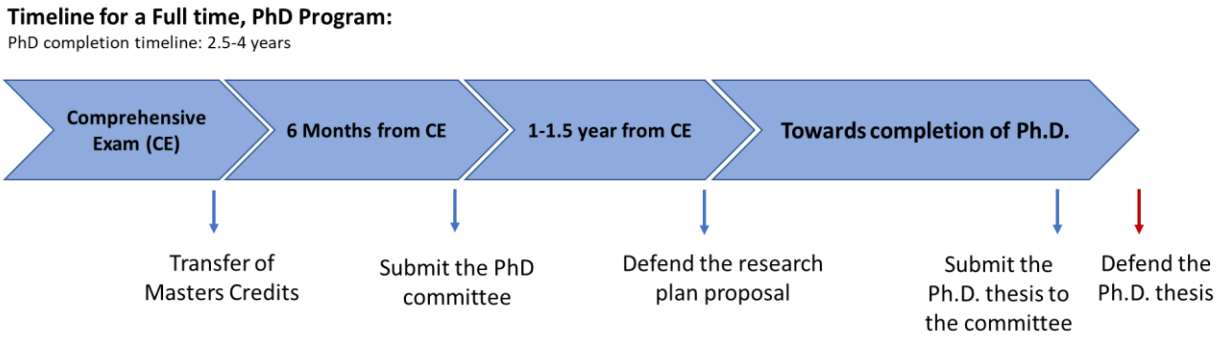
The doctoral program offers research opportunities across all traditional and cutting-edge subjects in materials science. PhD candidates are encouraged to explore these topics through the lens of statistics, database interpretation, and data mining methods, whenever possible.

Learning Outcomes

- Students will have in-depth knowledge of materials and data sciences, as well as the knowledge needed to integrate these fields.
- Students will have the critical thinking skills to define a research question and an appropriate strategy for developing a viable research proposal.
- Students will learn how to identify a materials science problem, either computational or experimental, and how an interdisciplinary approach that includes data analytics can find a solution to that problem.
- Students will develop familiarity with the interrelationship between experimental and computational perspectives of any given research problem in materials science.
- Students will have the ability to learn to write clearly and verbally present advanced scientific concepts.

7.2 PhD Program Planning

To start a PhD at MDI, a student must have a minimum GPA of 3.0 in the MDI Master's courses and must pass the MDI comprehensive exam. To attain the PhD degree, the admitted doctoral student must complete all the academic requirements outlined below. In total, a PhD candidate is required to complete 72 credits. The 30 credits from the Master's Program will be automatically transferred toward the PhD credits. The remaining 42 credits should be completed by taking at least nine credits of coursework, with the rest earned through research dissertation work. Please note that the "PhD Tracker" document, available with the Director of Administration, outlines PhD requirements and rules in detail. Students should follow it closely and consult their advising faculty with any questions. The timeline and key milestones are summarized below:



7.3 Course Requirements

Course credits: MDI offers two PhD-level courses: **MDI 601: Soft Matter Design and MDI 602: Fabrication and Mesoscale Materials Design**. Students can also register for **MDI 702: Independent Study** (one-time only) for course credit during their PhD program. Additionally, students may take MDI-recommended courses (listed in the PhD tracker document) or other relevant courses from other departments, as suggested by their Faculty Advisor.

Research Credits: Students must register for MDI 703 in the semester they plan to submit the research proposal/Research Plan. Registration for MDI 704 is required for regular Dissertation Research credits.

Undergraduate Courses: Graduate students can NOT take undergraduate courses towards PhD graduate credits (this includes undergraduate language courses). However, graduate students may audit selected undergraduate courses if their background in that area is weak.

Transfer Credits: The MDI program permits up to 36 credits to be transferred toward the PhD course requirements. However, transfer credits are not applicable to core courses or the master's project. After passing the comprehensive exam, students should complete the Transfer Credits form available on the GSE website, in consultation with their research advisor. The form must be submitted to the DGS for review, with final approval granted by the Office of the Registrar at UB. Only master's-level course credits from previous degrees are eligible for transfer toward PhD-level requirements.

Independent Study: Independent study is defined as individualized student work under the guidance of a faculty member. This course is intended to pursue topics not currently offered through regular coursework at UB. Independent study may be the focal point in the design of an individual program, or it may merely add desired depth or breadth to a student's formal degree program. An independent study course should be arranged with the instructor before registering. Prepare a written statement of the topic to be covered, the methodology, and the expected results, including a bibliography and the form of evaluation of work. Informal courses can be variable credit hours, so the number of credit hours you should register for should be discussed and agreed upon before registration. An "Independent Study" form must be completed, signed

by the instructor, the DGS, and placed in the student's file with the Director for Administration by the end of the semester you are registered for an independent study/readings course. The Graduate School requires this statement to be submitted together with the PhD Application to Candidacy forms.

Graduate Committee: The Graduate Committee for the PhD student consists of the student's research advisor, the Director of Graduate Studies (DGS), the Director of Administration (DOA), and the Head of the Department. This committee is responsible for making final decisions related to a student, course registration, leave of absence, or program-related issues, which are also in line with UB guidelines and requirements. This committee is independent of the PhD advisory committee that will assist with research-related progress.

7.4 PhD Offices and Etiquette:

Upon passing the PhD comprehensive exam, each student is eligible for a desk space on campus. Desk allocation is subject to the discretion of the Director for Administration, based on availability and seniority. It is essential for all students using the MDI shared office and lab spaces to maintain a respectful and harmonious environment. To facilitate this, MDI has established etiquette guidelines, and students are strongly encouraged to adhere to these rules. Find the etiquette rules provided in the Appendix at the end of this document.

7.5 Formation of the PhD Committee [Forms]

By the end of one year after passing the comprehensive exam, the PhD candidate must form a committee of at least three faculty members with the guidance of their academic advisor. The advisor can assist in identifying faculty who have an interest in the dissertation topic and are willing to serve on the committee. Students may choose to include additional committee members beyond the minimum requirement, and these members need not be part of the graduate faculty or even affiliated with UB. The PhD committee is crucial in setting the requirements for completing the program, so it is important to follow their guidance closely.

The student is required to select their graduate committee among the faculty list identified in SEAS and CAS faculty membership rosters. The graduate student should complete the committee form, obtain the appropriate faculty committee signatures and submit it to the Director for Administration.

7.6 Research Plan Proposal [Form]

Each PhD student is required to complete the Research Plan Proposal **within 1-1.5 years** after passing the comprehensive exam. The research plan proposal is open to the department, with prior notification sent out to the department with the help of the Director for Administration.

To complete the **PhD Research Plan Proposal**, the student must fulfill the following requirements:

1. Submit a written research plan. The student must submit a research-plan proposal (up to 5 pages including references) to the PhD committee at least one week before the proposal meeting. The proposal should describe the anticipated PhD research directions, supported by relevant literature, clear hypotheses or research questions, and any available preliminary results. It must identify expected deliverables, milestones, potential challenges, and contingency plans. A projected completion timeline, developed in consultation with the advisor, must also be included.
2. Deliver an oral research-plan presentation. The student must present a professional-quality, 30–40-minute research talk that describes and defends the proposed research plan before the selected PhD committee. The presentation is open to other members of the academic community who may like to attend the presentation.
3. Participate in a closed committee discussion. Following the public presentation, the student will meet privately with the PhD committee for approximately 15 minutes. This discussion will allow the committee to ask additional questions and recommend revisions, expansions, or other modifications to the proposed research plan.
4. Revise and resubmit if required. If the committee requests substantial revisions, the student, in consultation with the principal investigator (PI), must revise the written research plan accordingly and resubmit it to the committee for review and approval.

Once approved, the student must submit a PhD Application for Candidacy (ATC), obtaining signatures from the advisor and committee members before giving the form to the Director for Administration. **Note:** The PhD Advisory/Thesis Committee (ATC) form may be filed independently and does not need to be submitted with the research-plan proposal. Students are encouraged to establish their advisory committee as early as possible in their PhD program to support timely guidance, mentoring, and progress toward degree completion.

If a student plans to conduct research away from UB, they should complete the Research Plan Proposal before leaving for off-campus research. If this is not feasible, the student should contact the DGS at least two months prior to departure with a detailed, in-written action plan for completing all on-campus requirements. The research plan document should also be signed by the advisor who will ensure that the plan is met.

PhD students should note that all MDI PhD-level coursework and the written research-plan report will be evaluated in accordance with the MDI AI Policy (see Appendix 4). Students should consult their principal investigator (PI) and/or course instructor for additional guidance and course-specific requirements.

7.7 Doctoral Dissertation

The doctoral dissertation should be a substantial and original work of professional quality required of all PhD students. The dissertation is expected to be an original contribution to

knowledge and to meet other criteria of professionalism and competence. A description of the general expectation of a PhD dissertation may be found on the Graduate School website (PhD Dissertation Expectation). After satisfactory defense and dissertation approval by committee members, all PhD students must submit electronic copies of their dissertations to the graduate school. It is the student's responsibility to ensure that the dissertation conforms to all format requirements of the Graduate School.

***Dissertation Defense**:* Once the dissertation is in at least its penultimate form, it must be defended in a public oral defense. The defense can only be scheduled with the Committee's agreement that the student is ready based on the draft. The Graduate School and the Department of Materials Design and Innovation require **at least two weeks' notice** for the dissertation defense, which must be scheduled in a publicly accessible location. If the dissertation requires revisions after the oral defense, the Committee will specify the changes needed and will approve the dissertation only after these edits have been made.

7.8 Grades and Other Details

Grades: A "B minus" grade is considered the minimum satisfactory grade in graduate courses. All graduate students must maintain at least a 3.0 GPA throughout their PhD coursework. Refer to the academic ethics policies summarized at the end of the document.

Incompletes [Form]: Students are expected to complete coursework on time. A grade of 'I' (i.e., Incomplete) may be given in instances where the student has not been able to complete all the assigned projects and/or examinations within a course due to illness or other unforeseeable and compelling circumstances. The student should discuss the reason for their incomplete attempt with the instructor and not assume. A grade of Incomplete cannot be assigned for dissertation guidance, thesis, or projects in which the University requires continuing registration. Faculty should award the grade of "S" prior to completion of this work.

The course requirements for an incomplete grade must be completed within twelve months after the close of the term for which the incomplete is assigned. After this period, the Incomplete (I) grade will automatically be changed to an Unsatisfactory (U) grade. If there is a valid reason for waiving the deadline for removing an incomplete grade, in that case, the student may petition the Department's Graduate Committee before the deadline.

Continuous Registration and Leave of Absence [Form]: All graduate students must register each semester (excluding the summer) until they receive their degree or must request and receive a leave of absence prior to the beginning of the semester for which the leave is sought. Such leaves are granted by the Department DGS and the Committee of Graduate Studies of the Graduate School for compelling reasons. The form must then be forwarded to the Office of the Registrar by the last day of classes of the semester in which the leave is to begin. A student cannot be formally on leave during the semester preceding the award of their degree.

Normally, leaves are granted for a maximum of one year but may be extended for up to one additional year if circumstances warrant. Each department may establish its policies within the limits of these guidelines. All leave requests must be supported by adequate documentation.

Students approved for a leave of absence remain liable for any outstanding tuition and fees. Before applying for a leave of absence, international students are advised to consult with International Student and Scholar Services, 210 Talbert Hall, North Campus, 716-645-2258.

Returning Students [Form]: Failure to register for classes or secure a leave of absence by the last day of classes of the semester in which the leave is to begin will result in the student losing their access to register for courses in a future semester. To regain registration access within a subsequent five-year period, the student's home academic department must file a semester record activation request on behalf of the student (see the "Returning Student Semester Record Activation and Associated Fee" section).

Part-time Students: Most PhD students in MDI program are full-time students. In some instances, students may be admitted on a part-time basis. PhD Students admitted (after successful completion of the comprehensive exam) must complete all PhD requirements and dissertation submission within seven years.

7.9 PhD Checklist for Graduation

This checklist is designed to assist you as you prepare to graduate with a PhD from UB. You are responsible for ensuring that all requirements are met and that all necessary paperwork has been completed and filed on time.

1. **Submit a PhD Application for Candidacy (ATC):** The student must submit the PhD application for Candidacy (ATC) to the Graduate School within the appropriate deadlines defined below. You must provide to the Director for Administration your A.T.C., the Certificate of Full-Time Status Transcript, the CITI Program Certificate, and the transcript provided by your department. The Graduate School must approve your ATC for you to be a candidate for degree conferral officially. When your ATC is approved, you will receive an email from the Graduate School. If you believe your ATC was submitted, but you did not receive a letter, contact the Graduate School.

   ATC is due on March 1 for June (spring) conferral.
   ATC is due on July 1 for the August (summer) conferral.
   ATC is due on October 1 for February (fall) conferral.

2. **Report any ATC changes to the Graduate School:** After your ATC has been submitted to the Graduate School, changes to your advisor, committee members, expected degree conferral date, or future registration must be submitted to the Graduate School via the Director for

Administration for approval using the Change Expected Graduation Term or Amend the ATC. (PhD Students)

3. **Register for at least one credit during the semester** preceding your degree conferral date. Fall semester registration is required for the February conferral, and spring semester registration is required for the June conferral or September conferral.

4. **Complete the required number of credits**. Review your transcript and be sure you have completed the minimum number of credits required for your degree.

5. **Maintain the minimum GPA**. You must have a minimum 3.0 overall GPA in the courses/credits being applied toward your degree; your program may require a higher GPA.

6. **Remediate any incomplete grades or missing grades**. Be sure that there is no incomplete (I/U) grades or missing grades on your record for courses that are being applied to your degree program.

Electronic submission of your dissertation: Submit your dissertation to the graduate school via the ETD Administrator website.

Doctoral degree recipients' surveys: Complete and submit both online surveys.

Go to: www.grad.buffalo.edu Graduate School for the appropriate deadlines for submission of your dissertation and surveys.

7.10 Summary of the key documents

The following forms are available on the UB Graduate School website

1. **Certification of Full-Time Status** When a student has completed all coursework and has filed an Application to Candidacy/Applied for Graduation, the student can fill out this form to be considered "full-time" by UB for the purpose of loan deferral or immigration purposes. The form must be signed by the graduate student's advisor and approved by the DGS. File the document with the Director for Administration.
2. **Application to Candidacy and Petition to Amend an Application to Candidacy** The Application to Candidacy should typically be filed after completing advanced exams for PhD students. After filing your ATC, if there are any changes such as a change of advisor or committee members, change in conferral date addition, or deletion of credit hour registration, then you must fill out this form, obtain your advisor's signature, and bring it to the for DGS approval. Once signatures are obtained, submit the amended ATC to the Director for Administration.

3. **M Form** This form verifies that you have completed all departmental requirements for your degree and that your dissertation has been defended and accepted in its final form by your major advisor and committee. For PhD students, the Director for Administration will prepare the M form for the public defense date.
4. **Petition for an Extension of Time Limit to Complete Degree Program** UB gives seven years (including MS coursework) to complete a PhD degree. Student must attach a written statement documenting the following: (a) the cause of delay in completion; (b) a detailed description of work completed thus far; (c) a detailed month-to-month plan to be completed from now until the new anticipated completion date and (d) written endorsement from the Major Advisor regarding work completed thus far and the feasibility of the student's completion plan. The student should have the Major Advisor sign the form. The graduate student should bring the form and all attachments to the Director for Administration for DGS approval.
5. **Petition for a Leave of Absence** If applicable, this form must be filled out and signed by the graduate student's Major Advisor and brought to the Director for Administration for DGS approval at least two weeks before the last day of the semester in which the leave is to begin. Normally, leaves are granted for a maximum of one year but may be extended for up to one additional year if circumstances warrant.

APPENDIX 1

ACADEMIC INTEGRITY

Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the University while facilitating the University's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas. When an instance of suspected or alleged academic dishonesty by a student arises, it shall be resolved according to the following procedures. These procedures assume that many questions of academic dishonesty will be resolved through consultation between the student and the instructor (a process known as consultative resolution, as explained below). It is recommended that the instructor and student each consult with the Academic Integrity Office and/or the Office of Student Advocacy for guidance and assistance Office of Academic Integrity.

Examples of Academic Dishonesty include, but are not limited to, the following:

- **Aiding in academic dishonesty.** Taking action that allows another student to engage in the act of academic dishonesty, including, but not limited to, completing an examination or assignment for another student or stealing an examination or completed assignment from another student.
- **Cheating.** Includes, but is not limited to (1) use of any assistance not authorized by the course instructor(s) in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the course instructor(s) in writing papers, preparing reports, solving problems or carrying out other assignments; or (3) stealing tests or other academic material belonging to the course instructor(s).
- **Falsifying academic materials.** Fabricating laboratory materials, notes, reports, or any forms of computer data; forging an instructor's name or initials; resubmitting an examination or assignment for reevaluation that has been altered without the instructor's authorization; or submitting a report, paper, materials, computer data, or examination (or any considerable part thereof) prepared by any person other than the student responsible for the assignment.
- **Misrepresenting documents.** Forgery, alteration, or misuse of any university or official document, record, or instrument of identification.
- **Plagiarizing.** Copying or receiving material from any source and submitting that material as one's own, without acknowledging and citing the source (quotations, paraphrases, basic ideas), or in any other manner representing the work of another as one's own.
- **Purchasing academic assignments.** Purchasing an academic assignment intended for submission in fulfillment of any course or academic program requirement.
- **Selling academic assignments.** Selling or offering for sale any academic assignment to any person enrolled at the University at Buffalo. No person shall offer any inappropriate assistance in the preparation, research, or writing of any assignment, that the seller knows, or has reason to believe, is intended for submission in fulfillment of any course or academic program requirement.

- **Submitting previously submitted work.** Submitting academically required material that has been previously submitted, in whole or in substantial part, without prior and expressed consent of the instructor.

APPENDIX 2:

Etiquette at MDI Shared Office Space:

It is important that we maintain a respectful and harmonious environment conducive to studying and working effectively. To ensure this, MDI has drafted the etiquette guidelines, and students are highly recommended to be followed:

- **Orientation:**
    - Provide new office mates with a comprehensive orientation to familiarize them with office protocols, facilities, and expectations.
    - Introduce them to other team members and explain any specific roles or responsibilities they may have within the office.
    - Encourage open communication and be available to answer any questions or concerns they may have during their transition period.
- **Respect personal space:** Be mindful of the boundaries of others and avoid invading their personal space. Give adequate space between desks or workstations to ensure comfort and privacy.
- **Be mindful of noise levels:** Respect the need for a quiet environment for studying or working. Keep conversations at a reasonable volume and avoid unnecessary loud noises or disruptions. If you need to listen to audio, such as lectures or music, use headphones to avoid disturbing others. Keep the volume at a level that only you can hear.
- **Take breaks responsibly:** If you need to take breaks, do so in a way that minimizes disruption to others. Step away from your workstation if you need to make phone calls or engage in activities that may be noisy or distracting.
- **Communicate courteously:** When interacting with others, be polite and respectful. Use appropriate language and tone, especially in shared spaces where others may be studying or working.
- **Be considerate of others' schedules:** If you need to hold discussions or group meetings, schedule them at times that are convenient for everyone involved. Avoid disrupting others who may be focused on individual tasks.
- **Maintain cleanliness:** Keep your workspace tidy and organized. This includes cleaning your area, ensuring the monitor and keyboards are regularly maintained, and organizing books and documents. Dispose of trash properly and avoid cluttering common areas. This helps create a conducive environment for everyone.
- **Food Habits:**
    - Be mindful of others' sensitivities and allergies when bringing food into the office.
    - Avoid strong-smelling or messy foods that may disturb or inconvenience your office mates.
    - Clean up after yourself and dispose of food waste properly to maintain a pleasant environment for everyone.
    - Do not leave any wet food overnight in the office space. Either take it home or dispose of it appropriately by the end of the day.
- **Cleaning Schedules:**

    - Establish a rotating cleaning schedule where each office mate is responsible for tidying up common areas such as the kitchen or shared desks/bookshelves.
    - Clearly communicate expectations regarding cleanliness and adhere to the agreed-upon schedule.
    - Promptly report any issues with cleanliness or maintenance to ensure a hygienic workspace for all.
- **Respect diversity:** Be mindful of cultural and personal differences among your peers. Avoid making assumptions or engaging in behavior that may be offensive or discriminatory.
- **Address conflicts respectfully:** If conflicts arise, address them calmly and respectfully. Use open communication to resolve differences and find mutually acceptable solutions.
- **Visitors are not allowed:** Refrain from bringing guests or external individuals into the office without prior authorization from the department office.
- **Declaring Before Leaving the Space:** Students who plan to be away for long periods (> 2 months) during their PhD or have completed their term as a Postdoc/Ph.D./Master must declare the empty desk to Laurie. Clear all the documents, samples, and other items before leaving for long periods. Due to limited space availability at MDI, the desks will be rotated.

If a student receives more than two complaints from their office mates, and if it is deemed a significant violation of one or more of the above rules, they may temporarily lose access to the space at MDI.

Students will sign and date a copy of this etiquette. If you have any questions, comments, or concerns about this document, please discuss them with Laurie Barszcz before signing. All parties involved must have a clear understanding of the rules and responsibilities outlined. P

APPENDIX 3

MDI PHD TRACKER

Comprehensive Exam:

- *Two attempts will be provided. Prepare for both the written and oral exams.*
- *Transfer credits:*
  - *After qualifying for the comprehensive exam, meet with the DGS and DOA to finalize PhD transfer credits.*
  - *Fill out the Transfer Credits form available on the GSE website for proposed transfer credits. The form must be signed by the DGS.*
  - *Transfer credits (UB or non-UB student) are only applicable for the MDI PhD Program*
  - *No more than 36 credits of the total credits required for a doctoral program are eligible for the transfer.*
  - *All foundational courses (MDI 501-MDI 508) are compulsory, even for transfer students.*

Research Plan Proposal:

- *This requirement should be completed within 1 to 1.5 years after the comprehensive exam. It cannot be delayed till the last 2 semesters of the PhD proposal.*
- *Form the PhD committee with guidance from the supervisor.*
- *Submit a written document (3-5 pages) to the committee before the research plan presentation.*
- *Arrange for a formal presentation with the committee to evaluate the research plan.*
- *Present the tentative timeline for the PhD in the report and during the presentation.*
- *Submit the ATC form with signatures from the PhD committee members.*
- *If you plan to conduct the research program away from UB, contact the DGS and DOA at least two months before departure with details (transcripts and action plan for completing all on-campus requirements).*

Compulsory PhD Course Requirements:

ADD the course number completed/registered and indicate if you received an appropriate grade:

	Course Number	Completed / Registered	Grade
PhD Course 1:			
PhD Course 2:			
PhD Course 3:			

- *PhD electives can be taken within or outside the department with approval from the research advisor.*
- *MDI offers two Ph. D.-level courses: MDI 601: Soft Matter Design and Fabrication and MDI 602: Mesoscale Materials Design, alternately in the Fall*

semesters. These courses are advised but not compulsory.

- *Students must register for MDI 703 in the semester they plan to submit the research proposal/Research Plan.*
- *Registration for MDI 704 is required for regular Dissertation Research credits.*
- *MDI 702 Individual Project can be taken **only once** during the entire PhD program with approval from the DGS and the research advisor. The student is required to submit the Individual Project form (available with DOA) at the beginning of the semester for DGS approval.*
- *Only grades above B- in graduate-level courses will be considered towards completing the coursework.*
- *If you have transfer credits, ensure they are properly posted on your transcripts.*
- *Monitor your course and research grades immediately after they are assigned at the end of the semester. Contact your research advisor to ensure they are properly posted before the end date for grade submission.*
- *Exclude incomplete, unsatisfactory, and failed grades from your transcript. Contact your faculty advisor promptly if needed.*
- *The latest PhD curriculum credit distribution is provided at the end of the document for your reference.*
- *Arrange a meeting with the DGS, DOA, and research advisor:*
  - *At least 1 year (or 2 semesters) before completing the research thesis defense.*
  - *At least 2 months in advance, provide details of completing all on-campus requirements when conducting off-campus research.*

Preparing for PhD Research Defense:

- *Verify that you have received at least 72 credits on your transcript. (attach student transcript)*
- ***Update the ATC form:** Choose your final graduating semester and report immediately if you have made any changes to the original ATC form. https://ed.buffalo.edu/content/dam/grad/forms/phd-atc-2022.pdf.*
- ***To prepare your PhD thesis:** Follow the instructions provided by UB. You can find detailed guidelines at the following link: https://www.buffalo.edu/grad/succeed/current-students/policy-library.degree-requirements.html.*
- *Submit the completed thesis to the committee 1.5-2 weeks before the defense date.*
- *Send an abstract (no more than 250 words) to the department and reserve a room for the open defense.*
- *After receiving final approval from the committee, submit the M-Form.*

Section C: Curriculum Effective Fall 2024		
Subject Code & Number:	**Course Title:**	**Credits:**
Required Courses:		**30**
MDI 501	Intro to Materials Design & Innovation	3
MDI 502	Quant Structure-Property Relationships	3
MDI 503	Thermodynamics & Molecular Structure	3
MDI 504	Multivariate Stats & Material Informatics	3
MDI 505	Computational Materials Chem &	3
MDI 506	Kinetics, Microstructure and Defects	3
MDI 507	Quant Meth for Materials Characterization	3
MDI 508	Experimental Design for Mat. Dev.	3
Electives from the MS tracks OR Master's project		**6**
Two electives from the UB Master's Track		6
(OR) MDI 700	Master's Project	6
Elective Courses: All PhD students must take equivalent of 9 credits in Lecture		**9**
under the guidance of research advisor		
MDI 601	Soft Materials Design	3
MDI 602	Fabrication & Mesoscale Materials Des.	3
CSE 555	Intro to Pattern Recognition	3
CSE 674	Advanced Machine Learning	3
MAE 700	Bayesian Methods in Engineering Apps	3
STA 504	Statistical Comparisons & Associations	3
STA 515	Distribution-free Inference	3
STA 517	Catgeorical Data Analysis	3
STA 522	Introduction to Theoretical Stats II	3
STA 551	Stochastic Processes	3
STA 561	Longitudinal Data & Time Set Analysis	3
STA 581	Multivariate Data Analysis	3
MTH 511	Probability Theory	3
MTH 549	Intro to Partial Differential Equations	3
MTH 731	Functional Analysis	3
MAE 529	Finite Elemental Structural Analysis	3
MAE 540	Computational Fluid Mechanics	3
MAE 541	Topics in Finite Elemental Anlysis	3
IE 576	Applied Stochastic Processes	3
IE 671	Nonlinerar Programming	3
IE 675	Game Theory	3
CE 530	Molecular Simulation	3
Any other Electives	Advised by the Research Advisor	3 or 6
MDI 702	Independent Project	3
Culminating Experience:		**33**
PhD Qualifying Exam		0
MDI 704	Dissertation Research	30
PhD Dissertation Defense		0
MDI 703	Research Proposal (Required)	3
Total Credit Hours:		**72**

APPENDIX 4

MDI AI POLICY

Policy on the Use of Artificial Intelligence in Courses and Projects

Department of Materials Design and Innovation
University at Buffalo

April 14, 2026

The Department of Materials Design and Innovation (MDI) sits at the intersection of materials science and data science. The use of machine learning (ML) and Artificial Intelligence (AI) tools is fundamental to the education of our students and the research of our faculty. But more is true – understanding how ML and AI tools work, when results can be trusted, and how to maximize insight through the use of ML/AI is critical to effective and ethical use of these methods. The purpose of this policy is to help students and faculty in the appropriate deployment of ML/AI in teaching and learning. In particular, this document focuses on the use of generative AI tools, called AI tools below.

1. Purpose

This policy establishes guidelines for the ethical, transparent, and effective use of AI tools in coursework, research, and projects within the department. It aims to:

- Promote **learning and skill development**
- Ensure **academic integrity**
- Encourage **responsible, ethical, and innovative use of AI**
- Prepare students for **industry practices involving AI-assisted workflows**

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2. Scope

This policy applies to:

- All undergraduate and graduate courses
- Capstone and design projects
- Independent studies and research conducted under departmental supervision
- Master's thesis and project reports and Ph.D. dissertations

It covers all generative and analytical AI tools, including (but not limited to):

- Large language models (LLMs)

- Code generation tools
- AI-based data analysis platforms
- Image, simulation, and modeling assistants

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3. Guiding Principles

1. **Ethics** – Any use of AI by MDI faculty or students must uphold ethical principles.
2. **Transparency** – AI use must always be disclosed.
3. **Accountability** – Students are responsible for all submitted work, including AI-assisted portions.
4. **Attribution** – Proper acknowledgment of all AI contributions to work is required.
5. **Learning** – AI should support but not replace core learning objectives.
6. **Equity** – Policies should ensure fair access and consistent expectations across courses.
7. **Data** – MDI adheres to FAIR data use principles: Findable, Accessible, Interoperable, Reusable.

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4. Levels of Permitted AI Use

Each MDI course – indeed potentially every assignment and problem in an assignment – must clearly specify whether and how AI is to be used for that course/assignment/problem. Usage may include:

- Prohibited Use;
- Limited Assistance (e.g. use for debugging, or grammar); students must disclose AI use
- Guided Use (e.g. AI assisting in code suggestion and data analysis support); students must disclose AI use and be prepared to explain outputs
- Open Use (e.g. AI fully allowed as a tool); students must disclose and document AI use

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5. Required Disclosure Statement

All assignments using AI must include a statement detailing where and how AI was used. An example declaration is:

"AI tools (e.g., [tool name, e.g. ChatGPT]) were used in this work for [specific purpose, e.g. to generate code to read in and write out data, and to plot outputs]. All outputs were reviewed, validated, and modified by the author."

If AI is used in substantive ways, a student should include information such as examples of the prompts that were used, a description of how outputs were modified, and details of validation steps.

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6. Acceptable Uses

Absent specific guidelines, students may use AI tools for:

- Debugging code
- Generating initial drafts or outlines
- Exploring alternative modeling approaches
- Data cleaning suggestions
- Visualization ideas

Even in such uses, students must disclose the use of AI tools.

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7. Prohibited Uses

Unless explicitly allowed, the following uses of AI tools are prohibited:

- Submitting AI-generated work as original
- Using AI during closed-book exams
- Fabricating data or results using AI
- Bypassing learning objectives

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8. Verification and Validation Requirements

For all AI-assisted work, students must:

- Verify correctness (e.g., test code, validate models)
- Cross-check with theory or empirical data
- Identify limitations or uncertainties in AI outputs

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9. Course Syllabus Requirements

Each instructor must include:

- AI usage level in the course, and each assignment should specify the allowable use of AI for that assignment and/or for each problem in an assignment.
- Examples of allowed and prohibited use
- Disclosure expectations
- Consequences of misuse

Instructors are encouraged to incorporate in-class or controlled assessments, and to require annotation in code that explains reasoning, to assist in achieve learning outcomes.

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10. Faculty Responsibilities

- Clearly communicate expectations
- Design assignments that emphasize reasoning over output
- Update materials to reflect evolving AI capabilities
- Ensure equitable access to AI tools when required

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11. Academic Integrity and Violations

Unauthorized use of AI is a violation of UB policy and may result in disciplinary steps.

Violations include: any undisclosed AI use, misrepresentation of AI-generated work, or use of AI that bypasses learning objectives.

Consequences of violating AI use policy may include:

- Assignment failure
- Course failure
- Disciplinary action

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12. Data Privacy and Security

Securing data, especially Class 1 (Restricted data) and Class 2 (Private data) data, is of utmost importance. Class 1 and 2 data should not be uploaded or used in processing to sites that do not have data agreements with the University at Buffalo. Neither faculty nor students should upload or process data on unsecured cloud-based platforms.