UB APPLIED ONTOLOGY GRADUATE STUDENT HANDBOOK
(Master of Science)

November 7, 2025

Welcome to the graduate program in Applied Ontology at the State University of New York (SUNY) University at Buffalo (UB)

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Students who intend to pursue PhD studies in Applied Ontology should initially register for the Applied Ontology M.S. When approval for the Applied Ontology PhD program is granted, we will work with students who have qualified for the PhD on enrollment in that program.

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DEPARTMENT CONTACTS

Department Website: https://www.buffalo.edu/cas/philosophy/grad-study/ontology/ontologymasters1.html

Program Director John Beverley
107 Park Hall
Email: johnbeve@buffalo.edu

ABOUT THIS HANDBOOK

This document will be updated periodically. While the Department reserves the right to change rules during the time the student is in the program, continuing students may choose to be governed by the rules that were in place at the time they entered the program

Please contact the Program Director with corrections or suggestions for improvements to this Handbook.

Students are responsible for making themselves familiar with program and university rules; the latter are available from the Graduate School web page. In case of conflict, University rules trump those of the program.

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RULES & REQUIREMENTS

1. APPLYING TO THE MASTER'S PROGRAM

> Though this program was approved late into the Fall 2025 semester, we are enrolling students for Spring 2026, which begins January 20, 2026. In the interest of giving students more time to prepare application materials, potential students may request that partial submissions should be evaluated, allowing conditional admission to the program on receipt of the remaining documents.

1.1 Application Deadlines: The Applied Ontology program maintains rolling admissions, which means applications will be considered for a given semester up to two weeks prior to the first day of classes for that semester. Potential students are however encouraged to apply prior to June 1st for Fall entry and prior to November 1st for Spring entry.

1.2 Entrance Requirements: To enter the M.S. program students must either have:
  i. an undergraduate degree with at least a 3.0 GPA with an emphasis on logic and/or metaphysics, or
  ii. substantial professional experience working in ontology or in some closely related field

The 3.0 GPA requirement can be waived in special cases, including: a much higher GPA in logic courses only; marked improvement over the course of one's undergraduate career; graduate GPA at or above 3.0.

1.3 Application Materials: All applications and supporting materials are to be submitted through UB's online application system. https://ubgradconnect.buffalo.edu/apply/. Applications should include:
  a) A writing sample on ontology or a relevant subject. (Recommended length 2500 words.)
  b) A brief statement of purpose. (Up to 500 words)
  c) Resume/CV
  d) At least two letters of recommendation providing appraisals of either academic or professional experience and of prospects for success at the graduate level.
  e) Unofficial transcripts of all undergraduate and graduate work. (Official transcripts will be requested if admitted.)
  f) International students must provide proof (in the form of examination scores) that they have satisfied the University's minimal criteria for English Proficiency. The University sets the following minimums: TOEFL (IBT): 79; TOEFL (PBT) 550; IELTS: 6.5 (no sub-score below 6.0). This requirement is automatically waived for international students who are already in the US to complete a degree program. For further exceptions see the English Proficiency information at the University at Buffalo's Graduate School site:
  g) https://www.buffalo.edu/internationaladmissions/get-ready-to-apply.html

2. ACCEPTANCE INTO THE MASTER'S PROGRAM

2.1 Delayed Entry: Students who have accepted our offer of admission may delay their start date by at most one semester. After that, they must reapply via the standard process.

2.2 Adviser Assignment: The Program Director will assign each new student an adviser before their first semester. Students can change their adviser after completing their first semester in the program. They must obtain the consent of the new adviser and notify the Program Director for the change to be official.

2.3 Pre-registration Consultation: Students must contact their adviser and discuss their course registration prior to the start of each semester. Failure to consult one's adviser before classes begin will result in an automatic loss of good standing. This rule holds for every semester the student is in the department.

2.4 Symbolic Logic Requirement: Every student must either (1) pass the Symbolic Logic Competency Exam before graduating or (2) receive a B+ or better in an Independent Study covering Symbolic Logic. Previous logic courses cannot satisfy the Symbolic Logic Requirement. Students should be aware that many courses in the UB applied ontology program require (1) or (2) for enrollment.

The Symbolic Logic Competency Exam is offered twice per year: the week before Fall semester classes begin and the week before Spring semester classes begin.

Every incoming first-year student must take the Symbolic Logic Competency Exam prior to starting classes. Incoming students who do not pass the Symbolic Logic Competency Exam will be required to take it the next time it is offered. Students who fail to pass the Symbolic Logic Competency Exam after two attempts must pass an Independent Study in Symbolic Logic with a grade of B+ or higher prior to graduation. For more information about the content and scheduling of the exam, please reach out to johnbeve@buffalo.edu.

3. THE M.S. PROGRAM

3.1 Required Credits: The M.S. student needs 30 credit hours from seminars or independent studies to obtain the degree. Successful completion of a typical course (seminar or independent study) counts for 3 credit hours. 2 credit hour courses will typically offer opportunities for acceptance as 3 credit hour courses through extra course work.

3.2 Master's Project Guidance: 3 (out of 30) credit hours must derive from PHI 701: MS Project Guidance to work on a Master's Project under the supervision of a faculty adviser.

3.3 Required Courses: All M.S. students must achieve a B+ or better in the following courses offered by a faculty member of the Applied Ontology program:

- PHI 530: Ontology Engineering
- PHI 531: Problems in Ontology
- PHI 598: Applied Ontology Seminar

Students must satisfy the Symbolic Logic Requirement (see **§2.4** above). No more than 3 credit hours taken to satisfy the Symbolic Logic Requirement can be counted towards the 30 credits needed for the degree.

The 30-credit hour curriculum combines foundational ontology coursework with applied research and professional development
- 9 credit hours of required coursework in ontology methods, covering formal ontology, knowledge representation, ontology engineering and ontology project management (as covered in PHI: 530, PHI: 531, and PHI: 598)
- Up to 9 credit hours of thesis guidance for the completion of a master's thesis.
- Up to 6 credit hours of directed internship coursework, allowing students to apply ontology principles to real-world challenges in their professional domains.
- At least 12 credit hours of electives focusing on domain-specific ontology applications, such as AI, healthcare, business intelligence, and data governance

3.4 **Elective Courses:** Students are required to take 12 elective credit hours to complete the M.S. We provide here a list of courses students may take to satisfy the 12 elective credit hour requirement. This list is not intended to be exhaustive.

- PHI SEM 519 - Topics in Logic
- PHI SEM 636 – Logic for Ontologists
- PHI SEM 531 – Problems in Ontology
- PHI SEM 550 - Spatial Ontology
- PHI TUT 596 – Applied Ontology Internship
- BMI SEM 501 - Survey of Biomedical Informatics
- BMI SEM 508 - Biomedical Ontology
- BMI SEM 521 - Logic Programming for Biomedical Ontologies
- BMI SEM 708- Advanced Topics in Biomedical Ontology
- LIN LEC 567 - Computational Linguistics
- MGS LEC 628 - Data Visualization
- MGS SEM 596 - NLP in Management Research
- MGS LEC 660 - Big Data Information Management
- GEO 511 LEC - Spatial Data Science
- GEO 595 LEC - Database Design for GIS
- CSE LEC 560 - Data Models and Query Languages
- CSE LEC 562 - Database Systems

Students who identify courses offered at UB that they believe relevant to the field, but which are not included in this list, are encouraged to petition their adviser to have such courses count as elective credit.

3.5 **Master's Project:** Students must complete a project under the supervision of their advisor. The project is to be completed within one term. During that term, the student signs up for 3 credits of M.S. Guidance. Only the instructor of this course is required to approve the M.S. project.

The project may take the form of a paper between 5000 and 8000 words on a topic chosen under consultation with their adviser, which will typically involve the

construction of an open-source ontology or knowledge graph together with appropriate documentation. Other forms the project might take include the management of a team formed to create a paper in ontology designed for publication, creation of a novel semantic tool, or an upgrade to some part of the existing ontology-related tool stack.

3.6 S/U Grades: Students have the option of taking 3 credit hours for a grade of satisfactory (S) or unsatisfactory (U), rather than the typical A-F letter grade.

Students who wish to take a graduate course on an S/U basis must submit a written request to the instructor by the last day of the second week of classes. The instructor's decision will be final and will be transmitted to the student in writing. Instructors cannot require a final paper from a student taking a course S/U.

No course taken for S/U shall satisfy required courses listed at **§3.3**.

3.7 Incompletes: Under extreme circumstances, students may take an incomplete in a course, which is effectively an extension on the deadline for completion of coursework for a class beyond the final day of the semester in which that class is taught.

The default deadline for resolving an incomplete is four weeks from the final day of the term according to the university academic calendar. Alternative deadlines may be set by the instructor based on the reason the incomplete is being requested or on individual circumstances. Students should be aware that extensions are granted only in extreme circumstances.

3.8 Graduate School Forms and Deadlines: As students near completion of the M.S., they must file an Application to Candidacy form *prior* to the degree conferral date (usually six months prior).

4. TRANSFER COURSE CREDIT

4.1 Transfer Course Credit: Students with prior graduate work in ontology or in some neighboring field will be permitted to transfer course credit towards the M.S. only if it is completed with a grade of B+ or higher.

Students should meet with their advisers to decide which credits to propose for transfer. They must submit, along with written approval from their adviser, syllabi and transcripts for each course they wish to transfer. The Program Chair will rule on the proposal, after which the approved proposal will be forwarded to the Graduate school for final approval.

Students are permitted to apply prior course credit for up to 20% (6 credit hours) of the total number of graduate credit hours required (30 credit hours) to complete the M.S. degree. Students are permitted to apply for both transfer and professional experience credit (**4.2**), but these cannot together exceed 20% credit of the total number of hours for the M.S. degree.

4.2 Professional Experience Credit: Students with prior professional experience in ontology or in some neighboring field will be permitted to apply that experience

towards the M.S. only after consultation with the program director and after providing justification for how the professional experience satisfies the training goals of the Applied Ontology program. Justification will most often take the form of a written examination focused on student proficiency with respect to the stated learning outcomes of the program (listed below). The Program Director will rule on the proposal in consultation with Applied Ontology faculty, after which the proposal will be forwarded to the Graduate school for final approval.

Because evaluations of professional experience for credit are conducted in terms of competencies rather than course equivalents, students may earn credit for professional experience regardless of whether we offer specific courses covering the student's experience. However, the professional experience must align with stated learning outcomes of the program, which include proficiency in:

- Ontology modeling, knowledge representation, and data interoperability,
- Designing, evaluating, and refining data architectures using industry standard tools,
- Constructing and defending arguments for choosing between alternative implementations,
- Novel and emerging strategies for leveraging AI methods in implementations related to ontology, including using large language models and knowledge graphs,
- Mentoring others, leading interdisciplinary teams, and contributing to the advancement of professional communities, open-source initiatives, or international standards in applied ontology and related fields,
- Leading domain modeling initiatives in areas such as AI, healthcare, defense, geospatial intelligence, environmental science, or legal informatics,
- Analyzing complex domain-specific modeling problems and applying principles of applied ontology and other relevant disciplines to identify solutions.

Students are permitted to apply professional experience for up to 20% (6 credit hours) of the total number of graduate credit hours required (30 credit hours) to complete the M.S. degree. Students are permitted to apply for both transfer (**4.1**) and professional experience credit, but these cannot together exceed 20% of the total number of credit hours for the M.S. degree.

5. SATISFACTORY PROGRESS (SAMPLE FULL-TIME)

5.1 Prior to First Semester
- Meet with your appointed adviser (**§2.2**) to:
  - Consult regarding registration for upcoming semester (**§2.3**)
  - Discuss potential transfer credits from prior education (**§4.1**)
  - Discuss potential professional experience credit from prior work (**§4.2**)
- Satisfy the Symbolic Logic Requirement via written exam (**§2.4**)
- Determine when you are eligible to enroll by following the walkthrough here.
- Review the website here for a walkthrough on registering for the first time; when eligible, register for courses.

5.2 First Full Semester (Fall or Spring)
- Complete required applied ontology seminars (**§3.3**) for 6 credit hours

- Complete 6 credit hours from electives (**§3.4**)
- Consult regarding registration for upcoming semester (**§2.3**)

5.3 Optional Short Semester (Winter or Summer)
- If intending to graduate after the Second Semester, complete 3 credit hours of required courses (**§3.3**) and 3 hours of electives (**§3.4**)

5.4 Second Full Semester (Fall or Spring)
- Complete Master's Project (**§3.5**) for 3 credit hours
- Complete 3 credit hours from electives (**§3.4**)
- Complete 3 credit hours from transfer (**4.1**)
- Complete 3 credit hours from professional experience credit (**4.2**)
- Submit Application to Candidacy (**§3.8**)

5.5 Optional Short Semester (Winter or Summer)
- If did not complete Optional Winter/Summer Semester and intending to graduate this Semester, complete remaining credits of coursework (**§3.4**)

6. SATISFACTORY PROGRESS (SAMPLE 1 COURSE PER SEMESTER)

6.1 Prior to First Semester
- Meet with your appointed adviser (**§2.2**) to:
  - Consult regarding registration for upcoming semester (**§2.3**)
  - Discuss potential transfer credits from prior education (**§4.1**)
  - Discuss potential professional experience credit from prior work (**§4.2**)
- Satisfy the Symbolic Logic Requirement via written exam (**§2.4**)
- Determine when you are eligible to enroll by following the walkthrough here.
- Review the website here for a walkthrough on registering for the first time; when eligible, register for courses.

6.2 First Full Semester (Fall or Spring)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours
- Consult regarding registration for upcoming semester (**§2.3**)

6.3 Optional Short Semester (Winter or Summer)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours

6.4 Second Full Semester (Fall or Spring)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours
- Consult regarding registration for upcoming semester (**§2.3**)

6.5 Optional Short Semester (Winter or Summer)
- Complete 3 credit hours from electives (**§3.4**)

6.6 Third Full Semester (Fall or Spring)
- Complete 3 credit hours from electives (**§3.4**)
- Consult regarding registration for upcoming semester (**§2.3**)

6.7 Optional Short Semester (Winter or Summer)
- Complete 3 credit hours from electives (**§3.4**)

6.8 Fourth Full Semester (Fall or Spring)
- Complete 3 credit hours from electives (**§3.4**)
- Consult regarding registration for upcoming semester (**§2.3**)

6.9 Optional Short Semester (Winter or Summer)
- Complete 3 credit hours from transfer (**4.1**)

6.10 Fifth Full Semester (Fall or Spring)
- Complete Master's Project (**§3.5**) for 3 credit hours
- Submit Application to Candidacy (**§3.8**)

6.11 Optional Short Semester (Winter or Summer)
- Complete 3 credit hours from transfer (**4.1**)

7. SATISFACTORY PROGRESS (SAMPLE 2 COURSES PER SEMESTER)

7.1 Prior to First Semester
- Meet with your appointed adviser (**§2.2**) to:
  - Consult regarding registration for upcoming semester (**§2.3**)
  - Discuss potential transfer credits from prior education (**§4.1**)
  - Discuss potential professional experience credit from prior work (**§4.2**)
- Satisfy the Symbolic Logic Requirement via written exam (**§2.4**)
- Determine when you are eligible to enroll by following the walkthrough here.
- Review the website here for a walkthrough on registering for the first time; when eligible, register for courses.

7.2 First Full Semester (Fall or Spring)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours
- Complete 3 credit hours from electives (**§3.4**)
- Consult regarding registration for upcoming semester (**§2.3**)

7.3 Optional Short Semester (Winter or Summer)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours
- Complete 3 credit hours from electives (**§3.4**)

7.4 Second Full Semester (Fall or Spring)
- Complete required applied ontology seminar (**§3.3**) for 3 credit hours
- Complete 3 credit hours from electives (**§3.4**)
- Consult regarding registration for upcoming semester (**§2.3**)

7.5 Optional Short Semester (Winter or Summer)
- Complete 3 credit hours from electives (**§3.4**)
- Complete 3 credit hours from an internship (**4.1**)

7.6 Fifth Full Semester (Fall or Spring)
- Complete Master's Project (**§3.5**) for 3 credit hours
- Complete 3 credit hours from transfer (**4.1**)
- Submit Application to Candidacy (**§3.8**)