

# Horticulture and Crop Science The Ohio State University

## M.S./Ph.D. Graduate Program Handbook

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## 1. Introductory Information

### a. Preface

Welcome to the Department of Horticulture and Crop Science (HCS)!

The mission of the Department of Horticulture and Crop Science is to obtain knowledge about plants and their uses through innovation and discovery, and then disseminate that knowledge to benefit Ohio State University, the people of Ohio, and the world. Through the years, our programs have provided outcomes that impact the plant sciences with specific emphasis on Horticulture and the Crop Sciences. We are positioned to significantly contribute to the field of plant sciences, through the innovation, discovery, and application of our teaching, extension, and research programs. Our efforts will provide nutritious foods, plants for quality urban habitat, and plant-based products in an energy efficient and environmentally sustainable way, helping to meet the global challenges of food security and human health, environmental quality and sustainability, and advanced bioenergy and biobased products.

This HCS Graduate Studies Handbook describes the rules, processes, and procedures used in the graduate programs (M.S. and Ph.D.) in HCS. This document is written and updated by the Graduate Studies Committee (GSC), and new versions are approved by all voting faculty in HCS.

### b. Relationship to the University Graduate School Handbook

This Department of Horticulture and Crop Science (HCS) Graduate Student Handbook supplements, and should be used in conjunction with, the University [Graduate School Handbook](#). This handbook outlines specific rules, procedures, policies, and requirements that apply to graduate students and faculty associated with the HCS M.S. and Ph.D. graduate programs.

### c. Degrees offered

The department of Horticulture and Crop Science offers the following graduate degrees:

- Masters of Science (M.S.) in Horticulture and Crop Science, non-thesis option
- Masters of Science (M.S.) in Horticulture and Crop Science, thesis option
- Doctor of Philosophy (Ph.D.) in Horticulture and Crop Science

### d. The Graduate Studies Committee

The HCS Graduate Studies Committee (GSC) is selected and operates according to the University [Graduate School Handbook](#) and the HCS Pattern of Administration document.

The GSC is responsible for the conduct and administration of graduate programs in the Department. Actions taken by the committee are subject to approval, modification, or reversal by the Graduate Faculty members in the graduate program. Decisions made by GSCs must comply with Graduate School rules. The GSC assumes other responsibilities as assigned to it by the Graduate School, the Graduate Faculty members in the graduate program, the head of the academic unit, or the committee members. The committee reports on its actions taken during the year to Graduate Faculty members in the graduate program.

### E. Student Code of Conduct

We expect HCS Graduate Students to uphold the [OSU Student Code of Conduct](#), and [academic and professional standards](#).

## 2. Application and Admission

### a. Overview of application process

Applicants can apply to our graduate program via the [online application](#), by selecting the relevant graduate program ([M.S. in Horticulture and Crop Science](#), or [Ph.D. in Horticulture and Crop Science](#)).

**All of the following criteria must be met** for an applicant to enroll as a student in the Department.

1. The applicant must be deemed academically eligible.
2. A faculty advisor must be identified and the applicant and advisor must agree to work together.
3. Funding must be identified for the prospective student's stipend, tuition, fees, and program support.

Here are some details:

**1. Academic eligibility** is determined by the HCS GSC on the basis of all aspects of the application. This includes transcripts, English language proficiency scores (if applicable), letters of reference, personal statement, curriculum vitae, and other materials. Extracurricular activities, including research, professional experiences, service, and international experiences are also considered. The HCS GSC does not require the GRE, but scores may be submitted. The range of course work should indicate a sufficient background in basic science, and the personal statement is expected to demonstrate clear focus and interest in graduate study in this department. See the section below on Academic eligibility for additional information.

If a student is deemed academically eligible by both the Graduate School and the HCS GSC, the application is considered 'provisionally accepted' and the application is made available to faculty in the Department for review. Applicants can expect to receive email notification if their application has been provisionally accepted or denied.

**2. A faculty advisor** must be identified. Prior to application or at any point during the application process, prospective students should contact faculty members, whose research interests match their own, to try and identify a faculty advisor. Once students are provisionally accepted, faculty members will also see the list of applicants and contact those who they wish to have a further discuss about an advising relationship.

**3. Funding** for the applicant's stipend, tuition, fees, and research support must be identified prior to enrollment in graduate school. There are several options:

- Students can be financially supported by their adviser, through graduate research associateships (GRA), via grants or other means. This is the mechanism by which most graduate students in HCS are supported.
- Students can be financially supported by the Department through graduate teaching associateships (GTAs).
- Students can be financially supported through the College or University through Fellowships. The GSC applies for these Fellowships on behalf of the student, and they not open for self-nomination.

- Students can be self-funded (funding from one's home government, an external Fellowship, employer, or personal funds).

#### b. Academic eligibility

To be eligible to matriculate into the graduate programs in HCS, the following pre-requisites must be met:

- An earned baccalaureate or equivalent degree from an accredited college or university by the expected date of entry.
- Admission to the [combined B.S./M.S.](#) is subject the guidelines indicated by the College of Food, Agricultural, and Environmental Sciences.
- A minimum of a 3.0 cumulative grade-point average (CGPA) (on the 4.0 scale used at this university) in the last degree earned by the applicant relevant to the program of study. For international students, the CGPA is calculated on the home institution's grading scheme and the grade key on the transcript is then utilized to approximate an equivalent US grade based on the educational system of that country. Information about the degree programs and grading systems for the top 50 sending countries can be found at the [Graduate and Professional Admissions website](#).
- Appropriate training and experience that will enable the student to pursue their graduate studies in HCS. Given the multidisciplinary nature of work in HCS, no specific courses are universally required. It is recommended that prospective students with undergraduate degrees in non-STEM (Science, Technology, Engineering, or Math) fields contact the GSC Chair prior to submitting an application.
- A minimum score of 79 on the internet-based TOEFL (Test of English as a Foreign Language), or 7.0 on the International English Language Testing System (IELTS). This requirement applies only to an applicant from a country where the first language is not English, unless a bachelor's degree or higher was earned in an English-speaking country.

**Admission to the Ph.D. program without an M.S.:** Most HCS graduate students will have a M.S. degree before entering the Ph.D. program. However, admittance directly into the Ph.D. program (without an M.S.) is allowed. The decision to allow admission to the Ph.D. program without an M.S. is largely dependent on evidence that the applicant has significant research experience, such as that which would be conducted in an M.S. program.

#### c. Application Materials

##### **Summary of required application materials:**

1. A completed [online application](#)
2. An official transcript from each college or university attended, listing all courses taken, grades and degrees earned, and dates of graduation (Ohio State students do not need to submit transcripts from this university; these will be supplied by internal procedures.)
3. Three (3) letters of recommendation from persons acquainted with the applicant's academic program, scholastic ability, research experience, or professional performance.
  - a. Timeliness of letter writing: please request the submission of these letters in a timely fashion
  - b. Selection of letter writers: faculty members or others knowledgeable about the student's academic and/or research performance should be invited to serve as

references. It is recommended that applicants choose recommendation letter writers carefully. Letters from high level administrators are not necessarily helpful. The best letters are from instructors or mentors who know the applicant well enough to speak to the student's preparation and aptitude for graduate study.

4. A personal statement (1-2 page) describing the applicant's educational and professional goals and objectives. The statement should explain the applicant's specific research interests in the department and any potential advisor(s). The personal statement should explain clearly the student's background and highlight previous relevant experiences.
5. A curriculum vitae (CV). A detailed CV should provide contact information, as well as previous educational, professional, and research experiences. Please list presentations, posters, and published papers. Include examples of leadership activities, community service, extracurricular activities, or international experiences, as appropriate. Also, examples of proficiency in field, greenhouse, laboratory, analytical, and computational skills would be relevant. The CV is typically no more than two pages long.
6. [English proficiency requirement](#) (international students from non-English speaking countries)

It should be noted that HCS no longer requires GRE scores for application to its M.S. or Ph.D. programs.

#### d. Application Deadlines

While HCS has rolling admission, to be considered for internal University and College fellowships, completed applications must be received by December 1st (for international applicants) or December 15<sup>th</sup> for domestic applicants. The majority of applicants are for entrance in the Fall term (with some choosing to begin in Summer), with fewer applicants beginning in the Spring term. Students should talk with potential advisors regarding the best starting term.

We recommend that students have completed applications submitted by:

- August 31 for Spring
- January 31 for Summer
- November 30 for Autumn

#### 4. Advisor and the Student Advisory Committee (SAC)

##### a. The Advisor

The graduate advisor provides counsel and advice to the student on: course selections, individual program development, selection of research topics, and execution of the student's research and educational goals. The graduate advisor also conducts an annual review with each advisee. The advisor of an M.S. or Ph.D. student must hold Graduate Faculty membership at the appropriate level (Category M or P for a Master's student and only Category P for a doctoral student) in the Horticulture and Crop Science Graduate Program.

In the event that there are problems or conflicts related to the student's graduate program and/or the student-advisor relationship, the student is advised to meet and discuss the issue with the advisor, if appropriate. If the conflict remains unresolved, the student should schedule a meeting to discuss the issue with the Graduate Studies Chair. The Graduate Studies Chair (or as needed, the Chair Elect or other member of the GSC) should be viewed as the primary contact for mediation. Every effort will be made

to keep the issue confidential. For issues related to academic progress, the student's advisory committee (SAC) may be asked for additional input.

Grievances can be addressed through various mechanisms, including at the [Graduate School level](#), and through the [Office of Institutional Equity](#) (when related to harassment, discrimination and sexual misconduct). A [compilation of complaint and grievance systems](#) at OSU can be found through the Office of Academic Affairs.

**Change of Program or Advisor:** In Horticulture and Crop Science, graduate student funding is often tied to a specific project and professor. This funding reality suggests that conflicts between advisors and students need to be handled transparently and carefully. A student wishing to change to a different program or advisor should notify their current advisor and the GSC Chair. A plan for advisor/program transfer, funding, research topic, and formulation of a new SAC should be made within the semester/term.

b. The Student Advisory Committee (SAC)

### **The role of the SAC:**

The purpose of the SAC is to provide guidance in the development of a Course Program, approve the Course Program, provide input on the research proposal colloquium presentation, review the written and oral research proposal, review the thesis, or dissertation, and resolve matters concerning the student's graduate program. The student must keep the SAC informed on progress in research and coursework. The SAC is intended to be a formal mentoring network, though it is not expected to be the sole source of mentorship or expertise for students in the graduate program.

The student and advisor must together select graduate faculty to constitute the SAC. The selection of the SAC should be completed during the first semester of enrollment. Students should notify the GSC of the final composition of the SAC using Form 1, and the GSC should be advised in writing of any appointments, resignations, etc. from the SAC (using the same form).

### **i. Composition of the Master's SAC**

Specific guidelines for M.S. SAC selection and approval:

1. The chair of the committee (i.e. the Advisor) must have at least Category M status in HCS.
2. The SAC, consists of at least three (3) members (including the chair/advisor), with at least two (2) members having Category M status or higher with the OSU Graduate Faculty
3. If the third member is not a Graduate Faculty member at OSU, then their appointment to the SAC must be approved by the GSC.
4. The SAC should be formed by the end of the student's 1<sup>st</sup> semester.

It is recommended that the student meet at least annually with their SAC to discuss research plans and progress. In addition, students are required to meet with their SAC:

1. To prepare the Graduate Course Program (by the end of the 2nd semester)
2. To discuss research as part of the research proposal presentation (Colloquium).
3. For the Exit Seminar and Thesis Defense

The student should make every effort to schedule the colloquium presentation such that each SAC member can be present. The student is ultimately responsible for scheduling SAC meetings, getting

approval for the research proposal, scheduling oral and written exams, and keeping the SAC up to date on research progress.

## ii. Composition of the Ph.D. SAC.

Specific guidelines for Ph.D. SAC selection and approval:

1. The Chair of this committee (i.e. the Advisor) must have Category P status in HCS.
2. The SAC, including the advisor, consists of at least four (4) or more OSU faculty members having either Category M or Category P status.
3. At least one of the OSU members of the SAC must be from outside HCS.
4. SAC members from outside of OSU require a petition through [graforms.osu.edu](http://graforms.osu.edu), and would be in addition to the required OSU graduate faculty.
5. The SAC should be formed by the end of the student's 1st semester.

It is recommended that the student meets at least annually with their SAC to discuss research plans and progress. In addition, students are required to meet with their SAC:

1. To prepare the Graduate Course Program (by the end of the 1st semester)
2. To discuss research as part of the research proposal presentation (Colloquium).
3. For the Candidacy exam
4. For the Exit Seminar and Dissertation Defense

The student should make every effort to schedule the colloquium presentation such that each SAC member can be present. The student is ultimately responsible for scheduling SAC meetings, getting approval for the research proposal, scheduling all oral and written exams, and keeping the SAC up to date on research progress.

Candidacy and Final Exam Committees are usually the same as the SAC. The GSC should be notified via a new **Form 1** if the Candidacy Exam Committee or the Final Examination Committee is different from the SAC. The Ph.D. Final Examination Committee will also contain a Graduate Faculty Representative assigned by the Graduate School.

## 5. Masters Degree Programs

### a. Course based activities

Our curriculum aims to give students a breadth of knowledge in Horticulture and Crop Science. All students are required to take and pass courses in the four core areas of plant physiology, plant breeding/genetics/biotechnology, ecology, and experimental design/statistics, or demonstrate an equivalency. Equivalency can be demonstrated through prior coursework (at the equivalent graduate level) or relevant research/internship experiences. Students must petition the GSC for approval of core area equivalency via additional information (e.g., course syllabi, description of relevant research/internship related to learning objectives of HCS graduate curriculum) attached to [Form 2](#).

#### **Core areas:**

Plant physiology: (1 course or 3 credits)

HCS 5621	Physiology of Cultivated Plants (Autumn)	3
HCS 7821	Environmental Physiology of Managed Plant Systems (Spring)	3

Plant breeding/genetics/biotechnology: (1 course or 3 credits)



HCS 7625	Plant Breeding and Biotechnology (Autumn)	3
HCS 8825	Advanced Plant Breeding (Spring)	3

Ecology:

HCS 5602	Ecology of Agriculture (Autumn)	3
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Experimental design/statistics:

HCS 8887*	Techniques of Experimental Design (Spring)	4
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\*HCS 5887 or equivalent knowledge is a pre-requisite for 8887

In addition to core areas, students are required to take courses in:

Methods courses: (1 course)

HCS 7806	Research Methods in HCS (varies)	1-2
HCS 7004	Genome Analytics (Autumn)	4
HCS 7600	Metabolomics, Principles and Practice (Spring)	3
HCS 8825	Advanced Plant Breeding (Spring)	3

Current Topics: (2 courses)

HCS 8830	Current Topics (varies)	1
HCS 8830	Current Topics (varies)	1

Seminar and Colloquium: Students will enroll in HCS 7890 a minimum of two times. The student should take this course by the second semester of enrollment, during which the student will prepare a written proposal for their project and present a Colloquium describing their research proposal. The SAC must approve the written proposal and is expected to attend the colloquium presentation. The second and subsequent enrollments can be any semester thereafter. Students enrolling in HCS 7890 for credit must attend all departmental seminars.

HCS 7890	Seminar on HCS Topics (colloquium within first 2 semesters)	1
HCS 7890	Seminar on HCS Topics (register at least one more time)	1

Graduate Student Professional Development: should be taken during the first Autumn of enrollment

HCS 7001	Graduate Student Professional Development (Autumn)	1
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Research credits:

HCS 7999	Research (1-18 credits/semester)	varies
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Other coursework can be assigned by the SAC as they see fit.

Courses cannot be double counted in multiple categories. For example, if a student takes HCS 8825 to count as demonstrating competency in plant breeding/genetics/biotechnology, the same course cannot also count as a Methods course.

Each student's course plan should be submitted to the HCS Graduate Program as [Form 2](#) by the end of the first semester of enrollment.

Credit load: Fulltime M.S. students with a Graduate Associateship or a University/College fellowship should enroll for 18 credits per semester (or 12 credits in summer). Students that are funded via other mechanisms should consult with your advisor, and the graduate program associate, about the appropriate number of hours to schedule.

Transfer of credits: Graduate credits earned at another university may be transferred to this university. The Graduate School places no limit on the graduate credit hours that can be transferred. However, residence and minimum degree requirements determine the number of graduate credit hours that may be counted toward a graduate degree at OSU. In addition, the HCS GSC must approve the transfer of credits. Information about how to transfer credits can be found [here](#).

#### b. Co-Curricular Requirements

For those students carrying out thesis research, they will form a SAC, complete a colloquium, and write and defend their thesis. By the end of the first semester of the M.S., students should have formed and met with their SAC to determine their course plan ([Form 2](#)). By the end of the second semester, M.S. students should have completed their colloquium.

Students must send their M.S. thesis to their SAC no less than three weeks prior to the defense date. This [thesis draft](#) must be complete and include all sections and formatting required for submission to the graduate school. At least one week prior to the defense date, the SAC must unanimously agree that the thesis is sufficiently complete to be defended in the final exam. If extenuating circumstances arise, students should consult their SAC for timelines that deviate from the one presented above. Students are encouraged to have discussion with their SAC about what a defensible thesis is. It is the responsibility of the advisor to poll the SAC and inform the student that their thesis is defensible. Edits can be requested by SAC members after the thesis has been deemed defensible, prior to deposition with the graduate school.

**Exit Seminar requirement:** All students will present an Exit Seminar on the day of their final defense, immediately prior to the final exam. The final examination committee in HCS is the student's SAC. The student will be responsible for scheduling and notifying the department, SAC members, and associated units, of the time and place of their exit seminar presentation. Exit seminars will be video-linked between campuses. The exit seminar will be 40-50 minutes in duration, allowing 10-15 minutes for open questions and discussion for non-SAC members. The exit seminar is in addition to the final exam, which cannot exceed 2 hours. Thus, M.S. exit seminars plus the final exams should be scheduled for a block of 3 hours. All examinations involving video conferencing must adhere to the Graduate School's guidelines for video conferencing (see Appendix A). The oral portion of the masters examination must take place during announced university business hours.

**Final exam:** The final exam is an oral exam that will not exceed 2 hours, where the student defends their thesis research. The final examination committee is the students SAC. All master's examinations involving video conferencing must adhere to the Graduate School's guidelines for video conferencing (see Appendix A). The oral portion of the master's examination must take place during announced university business hours.

**Thesis and dissertation format info:** Information regarding formatting of theses and dissertations, as well as templates, can be found through the [Graduate School](#).

**Non-Thesis Exam:** The master's examination for a student pursuing the non-thesis option must include a written portion, either in the form of exam questions or a research report, and may include an oral portion. The examination will evaluate the student's proficiency and understanding of their field of study.

**Time Limit:** The maximum time for receiving departmental financial support, while completing the Master's degree, is 2 and 1/3<sup>rd</sup> years. Students are permitted more time to complete their degree, but will not be funded from Departmental sources for more than 7 semesters/terms. The maximum overall time to complete the Master's degree is 5 years. For cases with extenuating circumstances, the GSC and/or Graduate School may be petitioned to extend either the time limit for departmental funding, or the time towards degree completion.

**Graduate Research Symposium requirement:** The graduate research symposium occurs annually and alternates between the Wooster and Columbus campuses. This is the feature event of the department's graduate education program and it is required that all students attend. Exceptions will be made only for extenuating personal or programmatic considerations.

Annual attendance at the graduate research symposium is required for all graduate students on HCS department funds. However, students may petition the graduate studies committee for exemption to this requirement. Reasons for exemption include (but not necessarily limited to):

1. Out of state or out of country travel for reasons related to the student's research or other professional activity (i.e., conference participation)
2. Research activities that cannot be re-scheduled
3. Illness, funeral, or other "life event"

Students should discuss the rationale for the exemption request with his/her advisor, and advisor should provide approval prior to the student petitioning the graduate studies committee. In planned exemptions (such as case #1), students should petition for exemption through the graduate studies committee as soon as possible prior to the graduate research retreat. In unplanned exemptions (such as case #3), students should petition through the graduate studies committee as soon as possible after the graduate research retreat. Petitions to the graduate studies committee should include reason for exemption and justification. Decisions on granting exemption will be made at the next regularly scheduled meeting of the Graduate Studies Committee.

## 6. Doctoral Degree Program

### a. Course based activities

Our curriculum aims to give students a breadth of knowledge in Horticulture and Crop Science. All students are required to take, and pass, courses in the four core areas of plant physiology, plant breeding/genetics/biotechnology, ecology, and experimental design/statistics, or demonstrate an equivalency. Equivalency can be demonstrated through prior coursework (at the equivalent graduate level) or relevant research/internship experiences. Students must petition the GSC for approval of core area equivalency via additional information (e.g., course syllabi, description of relevant research/internship related to learning objectives of HCS graduate curriculum) attached to [Form 2](#).

#### **Core areas:**

Plant physiology: (1 course or 3 credits)

HCS 5621	Physiology of Cultivated Plants (Autumn)	3
HCS 7821	Environmental Physiology of Managed Plant Systems (Spring)	3

Plant breeding/genetics/biotechnology: (1 course or 3 credits)

HCS 7625	Plant Breeding and Biotechnology (Autumn)	3
HCS 8825	Advanced Plant Breeding (Spring)	3

Ecology:

HCS 5602	Ecology of Agriculture (Autumn)	3
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Experimental design/statistics:

HCS 8887*	Techniques of Experimental Design (Spring)	4
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\*HCS 5887 or equivalent knowledge is a pre-requisite for 8887

In addition to core areas, students are required to take courses in:

Methods courses: (2 courses)

HCS 7806	Research Methods in HCS (varies)	1-2
HCS 7600	Metabolomics, Principles and Practice (Spring)	3
HCS 7004	Genome Analytics (Autumn)	4
HCS 8825	Advanced Plant Breeding (Spring)	3

Current Topics: (3 courses)

HCS 8830	Current Topics (varies)	1
HCS 8830	Current Topics (varies)	1
HCS 8830 or equivalent class in another department	Current Topics (varies)	1

Seminar and Colloquium: Students will enroll in HCS 7890 a minimum of two times. The student must enroll for the first time by their fourth semester/term (including summer) of enrollment, during which the student will prepare a written proposal for their project and present a Colloquium describing their research proposal. The SAC must approve the written proposal and is expected to attend the colloquium presentation. The subsequent enrollments can be any semester thereafter. Students enrolling in HCS 7890 for credit must attend all departmental seminars.

HCS 7890	Seminar on HCS Topics (colloquium within first 4 semesters)	1
HCS 7890	Seminar on HCS Topics (register at least one more time)	1

Graduate Student Professional Development: should be taken during the first Autumn of enrollment

HCS 7001	Graduate Student Professional Development (Autumn)	1
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Electives: students must take at least 9 credits of electives at the 5000 level or higher. Courses that fulfill other requirements are not eligible to double-count as electives.

HCS or other	Electives (varies)	≥9
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Research credits:

HCS 8998	Pre-candidacy research (1-18 credits/semester)	varies
HCS 8999	Post-candidacy research (1-3 credits/semester)	varies

Students in the Ph.D. program must take at least 6 credits at the 7000 level or higher in one of the core areas or as an elective (i.e., HCS 7001, 7890, 8194, 8998, 8999 do not count towards this requirement).

Other coursework can be assigned by the SAC as they see fit.

Each student's course plan should be submitted to the HCS Graduate Program as [Form 2](#) by the end of the first semester of enrollment.

**Credit load:** Full time pre-candidacy doctoral students should take 18 credits per semester (or 12 credits in summer). Full time post-candidacy doctoral students should register for 3 credits per semester. Students not on a Graduate Associateship or a University/College fellowship should consult with their advisor, and the graduate program associated, about the appropriate number of hours to schedule.

**Transfer of credits:** Graduate credit earned at another university may be transferred to this university. The Graduate School places no limit on the graduate credit hours that may be transferred. However, residence and minimum degree requirements determine the number of graduate credit hours that may be counted toward a graduate degree at OSU. In addition, the HCS GSC must approve the transfer of credits. Information about how to transfer credits can be found [here](#).

**Students obtaining a Ph.D. after completing a M.S. in HCS at OSU:** Students must take colloquium (HCS 7890) at least once during their Ph.D. to present their written and oral proposal. Students must take at least 1 additional Current Topics, and 1 additional Methods course during the Ph.D. At least 6 credits at the 7000 level or higher must be taken. Students must have at least 9 credits of electives, though credits from the M.S. degree can count towards this requirement. Students do not need to re-take core competencies and professional development.

b. Co-Curricular Requirements

By the end of the first semester, Doctoral students should have formed and met with their SAC to determine their course plan ([Form 1](#)). The Doctoral students should complete their proposal and proposal presentation, as part of Colloquium, by the end of their fourth semester. Students are encouraged to complete the Candidacy exam by the end of their second year. Students who have not completed their Candidacy exam by the end of their third year will require a petition (from both the student and the advisor) to the GSC to maintain enrollment. This requirement includes students changing from M.S. to Ph.D. program.

Students must send their dissertation to their SAC no less than four weeks prior to the Dissertation defense. This [thesis draft](#) must be complete and include all sections and formatting required for submission to the graduate school. At least two weeks prior to the defense date, the SAC must unanimously agree (via GRADFORMS) that the dissertation is sufficiently complete to be defended in the Dissertation Defense. If extenuating circumstances arise, students should consult their SAC for timelines that deviate from the one presented above. Students are encouraged to have discussions with their SAC about what a defensible dissertation is. It is the responsibility of the advisor to poll the SAC and inform

the student that their thesis is defensible. Edits can be requested by SAC members after the dissertation has been deemed defensible, prior to deposition with the graduate school.

#### **i. Candidacy examination:**

The advisor serves as the chair of the candidacy examination committee, and a member of the committee. The advisor is responsible for coordinating the preparation and conduct of both the written and oral portions of the candidacy examination.

The responsibility for creating and evaluating the written and oral portion of the candidacy examination rests with the SAC. Under special circumstances, and with the approval of the GSC, other Graduate Faculty members may participate in generating, administering, or scoring parts of the written portion of the candidacy examination. Non-Graduate Faculty members may be appointed to the candidacy examination committee, by approval of the GSC and by petition to the Graduate School, in addition to the required four, current Ohio State Graduate Faculty members.

Student, advisor, and SAC should work together to come to an agreement regarding the format and timeline of the candidacy exam, at least one month prior to the written exam. Additionally, the time and date of the written and oral portions of the exam should be determined jointly. With permission from their advisor and SAC, students can elect to take the written portion of the candidacy exam using the "Proposal" option detailed below in lieu of standard questions from each SAC members.

**Guidelines for the "Questions" options for Ph.D. Candidacy:** Each portion of the written exam can be either open or closed book, as determined by each SAC member. After the final written exam is completed, the advisor will collate all of the responses and distribute them to the SAC. The SAC will then have one week to determine if the exam response is sufficient to move to the oral exam. It is up to each SAC member whether they would like to make the determination of adequacy of the written exam before proceeding to the oral exam, based on their individual exam, or on the entire written exam. This is equivalent to passing the written part of the general exam. If a student does not pass the written part of the candidacy exam, the SAC will determine what additional studies or other requirements must be met to reschedule the written portion (See Waiver information below). The student must file a notice that they will be taking their candidacy exam with the Graduate School (via GRADFORMS) no later than 2 weeks before the intended oral exam.

The oral examination must occur within one month of the student turning in the finished written exam to the SAC. The oral exam consists of a two-hour oral examination on topics from the written examination as well as any general knowledge pertaining to the student's program. Upon a [unanimous decision](#) that the student has sufficiently completed their candidacy exam, each SAC member (including the advisor) will indicate "Satisfactory" via GRADFORMS within 24 hours. While a student is allowed a second exam, a student who fails the candidacy examination twice is not allowed an additional examination.

**Guidelines for the "Proposal" option for Ph.D. Candidacy:** Student, advisor, and SAC choose a proposal topic. Students are encouraged to prepare one or more abstract(s) to send to the SAC. The Abstract(s) should include an overview of the proposed topic, the hypothesis they intend to investigate, proposed specific aims, and the justification or appropriateness of the topic as a grant proposal. The topic for the proposal will typically be unrelated to the students' dissertation research. However, in consideration of the student's particular situation and with recommendation of the SAC, the proposal can be written on a

topic related to the student's dissertation research. Within one week of sending the SAC the proposal abstract(s) each member must approve/disapprove of the proposal topic(s) in writing.

Once all SAC members approve a proposal topic, the one-month written portion of the candidacy exam begins. Preparation of the written proposal must follow the most current proposal format requirements of NSF, USDA-NIFA, or as determined by the SAC.

At the end of the one-month written exam period the proposal is given to each member of the SAC. Within one week of receiving the proposal, each SAC member must give the student written approval/disapproval. This is equivalent to passing the written part of the general exam. Upon SAC approval of the written proposal the student must register for the oral exam with the Graduate School. The Graduate School requires notice of at least two weeks. Prior to one week before the oral exam, each SAC member must provide substantive feedback about the proposal to the student (in person or via email). The oral examination must occur within one month of the student turning in the finished proposal to the SAC. The oral exam consists of a two-hour oral defense of the prepared proposal as well as any general knowledge pertaining to the proposal. Upon a [unanimous decision](#) that the student has sufficiently completed their candidacy exam, each SAC member (including the advisor) will indicate "Satisfactory" via GRADFORMS within 24 hours. While a student is allowed a second exam, a student who fails the candidacy examination twice is not allowed an additional examination.

**Waiver:** If, based on evaluating the written portion, the advisor or another member of the SAC sees no possibility for a satisfactory overall performance on the candidacy examination, the student may be advised to waive the right to take the oral portion. The SAC may not, however, deny a student the opportunity to take the oral portion.

Should a student have an unsuccessful first candidacy exam, the exam can be attempted one additional time. Information about a second candidacy exam can be found in the University Graduate School Handbook.

**Earning a Master's Degree on the Basis of Candidacy Examination:** A student in HCS may earn a master's degree on the basis of satisfactorily completing the doctoral candidacy examination under the following conditions:

1. It is recommended by the student's advisor and their SAC;
2. The student does not already hold an equivalent master's degree in the same field;
3. The student submits the Application to Graduate form by the published deadline; graduation deadlines established by the Graduate School are met;
4. Doctoral candidacy has not expired.

**Exit Seminar and Final Examination:** All students will present an Exit Seminar on the day of their final defense, immediately prior to the final exam. The dissertation/final examination committee in HCS is the student's SAC. The student will be responsible for scheduling and notifying the department, SAC members, and associated units, of the time and place of their exit seminar presentation. Exit seminars will be video-linked between campuses. The exit seminar will be 40-50 minutes in duration, allowing 10-15 minutes for open questions and discussion for non-SAC members. The exit seminar is in addition to the final exam, which cannot exceed 2 hours. Thus, Ph.D. exit seminars plus the final exams should be scheduled for a block of 3 hours. All dissertation examinations involving video conferencing must adhere to the Graduate School's guidelines for video conferencing (see Appendix A). The oral portion of the doctoral examination must take place during announced university business hours.

**Time Limit:** Students are eligible to receive departmental funds for at least 13 (4 and 1/3<sup>rd</sup> years), but no more than 17 (5 and 2/3<sup>rd</sup> years) semesters/terms (including summers). Students are permitted more time to complete their degree, but will not be funded from Departmental sources for more than 17 semesters/terms. For cases with extenuating circumstances, the GSC and/or Graduate School may be petitioned to extend either the time limit for departmental funding, or the time towards degree completion.

**Publication requirement:** Students should make their results available to the scientific community, via peer-reviewed scientific publications, and to stakeholders, via trade publications and technical journals, when appropriate. The Department requires Ph.D. students to have at least one manuscript published, in press, or submitted to a peer-reviewed journal before graduation. Evidence of this requirement should be provided to the GSC and can include a PDF or printed copy of the article or correspondence from the journal indicating a manuscript has been submitted or accepted.

**Thesis and dissertation format info:** Information regarding formatting of theses and dissertations, as well as templates, can be found through the [Graduate School](#).

**Transfer from M.S to Ph.D. Degree Program:** Eligible students in HCS can transfer from M.S. to Ph.D. programs without completion of the M.S. degree. The request for transfer will be made jointly by the student and advisor with endorsement of the SAC. The transfer will normally be made after 1 year of M.S. study. This transfer will be subject to approval of the GSC, and will be based on four criteria:

1. Student is up to date on required components for M.S. at the time of request (e.g., identified advisor and SAC, completed M.S. proposal, approved Graduate Course Program (i.e., Form 1)).
2. High scholastic performance (e.g. graduate GPA typically >3.5).
3. High aptitude for research (initiative, independence, originality, etc.) and demonstrated research experience equivalent to M.S. level.
4. An expanded scope of proposed research. Students who have already completed their colloquium must re-take it (HCS 7890) to complete an update written and oral proposal based on the PhD scope of research.

**Transferring from Ph.D. to M.S. Program in HCS:** A written request must be submitted by the advisor and signed by the SAC with an explanation of the rationale for the change. The letter must specify whether the change is to a M.S. plan A (thesis) or plan B (non-thesis) degree.

**Graduate Research Symposium requirement:** The graduate research retreat occurs annually and alternates between the Wooster and Columbus campuses. This is the feature event of the department's graduate education program and it is required that all students attend. Exceptions will be made only for extenuating personal or programmatic considerations.

Annual attendance at the graduate research symposium is required for all graduate students on HCS department funds. However, students may petition the graduate studies committee for exemption to this requirement. Reasons for exemption include (but not necessarily limited to):

1. Out of state or out of country travel for reasons related to the student's research or other professional activity (i.e., conference participation)
2. Research activities that cannot be re-scheduled
3. Illness, funeral, or other "life event"



Students should discuss the rationale for the exemption request with his/her advisor, and advisor should provide approval prior to the student petitioning the graduate studies committee. In planned exemptions (such as case #1), students should petition for exemption through the graduate studies committee as soon as possible prior to the graduate research retreat. In unplanned exemptions (such as case #3), students should petition through the graduate studies committee as soon as possible after the graduate research retreat. Petitions to the graduate studies committee should include reason for exemption and justification. Decisions on granting exemption will be made at the next regularly scheduled meeting of the Graduate Studies Committee.

## 7. Appointments and renewals

### a. Graduate Associates (GAs)

HCS GA are either Graduate Research Associates (GRAs) or Graduate Teaching Associate (GTAs). GRAs will carry out responsibilities in addition to a student's own thesis or dissertation research. GRAs are expected to contribute to non-thesis/dissertation research and other related laboratory or field activities, as well as providing departmental service, such as serving on committees.

GTAs funded through HCS will be assigned responsibilities that include, but are not limited to: weekly laboratory/recitation classes, delivering course lectures, preparation of exam and mid-term questions, and grading of assignments and exams. A GTA position will be a 50% appointment (duties should be limited to approximately 20 hours per week), thus a GTA can also register for classes and continue research during time outside of their teaching duties.

Departmental support will not be provided for non-thesis MS students.

### i. Appointments and renewals

**Offers and reappointments:** Any student accepting a GA appointment must be provided with a Graduate Associate Appointment document stating the terms of the appointment. This form is signed by the student, the Chair of HCS or their designee(s), the Graduate Studies Chair, and the advisor(s). All offers of GAs will be in writing, and originate from the office of the Department Chair. In HCS, appointments will normally be made for one year, but through mutual agreement between the student and the Chair of the Department, short-term appointments may be made (though not less than one semester). The standard GRA appointment will include summer terms. GTA appointments are made for the semester for which the TA'ed course is being offered.

Reappointment shall take place annually and is contingent on satisfactory progress (as indicated in the Annual Progress Report) and availability of funds. Appointments may be terminated for due cause as described in the Graduate Student Handbook. In order to be reappointed, a student must be: (i) in good standing with the Graduate School (GPA > 3.0, and other criteria); (ii) maintaining satisfactory progress in research, and (iii) performing service duties adequately. A student who does not maintain reasonable progress toward a degree or who does not fulfill other graduate program requirements, including those regarding professional standards and misconduct, may be denied further registration in that program by the Graduate School on the recommendation of the GSC Chair.

Ordinarily, termination of an appointment for unsatisfactory performance will not occur without a probationary period, during which the student will be given the opportunity to demonstrate improved

performance. The GSC reserves the right, however, to terminate an appointment without such a probationary period if such an action is needed in order to protect the integrity of the Department. The Graduate School will disallow reappointment of GAs who are no longer in good academic standing. If a student is not to be reappointed, they will be notified in writing by the Chair of the Department as soon as possible. Reasons for non-reappointment must be stated in writing. For two weeks after the date of the non-reappointment notice, a GA has the right to initiate an appeal to the head of the Department.

**Mid-appointment termination:** GA appointments may be terminated prior to the end of the appointment period only with the written approval of the Graduate School. A GA appointment can be terminated prior to the end of the appointment period for any of the following reasons:

1. the GA is no longer enrolled in the Graduate School
2. the GA is registered for fewer than the number of credit hours required for a GA appointment or fewer than three credit hours for a doctoral student who has passed the candidacy examination
3. performance as a GA is determined to be unsatisfactory by the employing unit
4. the GA accepts outside employment
5. the GA graduates

**Outside Employment:** Students with outside employment will not be eligible to receive Departmental Support, either as a GTA or GRA. Exceptions will be made only with express permission of the GSC.

**Provisions for vacation time:** Provision for time off for personal leave of less than two weeks duration, including breaks between academic terms, should be determined in consultation with the advisor (for GRAs) or direct supervisor (for GTAs). It is understood that there are many reasons for longer absences. In cases of dispute between a student and the faculty advisor or direct supervisor, the Graduate Studies Chair shall to be informed of, and play a role in, the approval/disapproval of long periods of absence (defined as more than two weeks). Guidelines for short-term absences (less than two weeks) and leaves of absence are given in the University Graduate School Handbook.

**Evaluation of graduate students:** All students will be evaluated annually by both the advisor and themselves, at an annual review meeting, using the Graduate Student Progress Reports for both advisor and student (Forms 6 and 7). This meeting is an opportunity for both the advisor and the advisee to check in regarding expectations, research progress, and overall well-being. In addition, annual reports allow the GSC to follow each student's progress in cases where there may be potential problems. It is the joint responsibility of the student and advisor to be sure the Graduate Student Progress Report is submitted on time. In some instances, participation in the evaluation by the Department Chair or GSC Chair may be warranted.

**Evaluation of GTAs:** Faculty supervisors should complete a peer evaluation of GTA teaching (using the current departmental "Peer Review of Teaching" form). GTA's can also receive SEI from students.

**University/OARDC Fellowships.** A Graduate School fellowship is a financial award made by the university directly to a graduate student to provide support during a portion of the graduate degree program. Fellows are selected on the basis of academic merit through a university-wide competition without respect to financial need. Two distinct kinds of Graduate School fellowships are awarded on a competitive basis: 1) first-year fellowships (University and Graduate Enrichment) for students applying to begin a graduate program at Ohio State and 2) Presidential Fellowships, which provide support to students completing their dissertation.

**Eligibility.** Eligibility criteria for a Graduate School fellowship vary by kind of fellowship and are set by the Graduate School. More information on fellowships is available [here](#).

**Nomination.** Candidates for the first-year and Presidential Fellowships are nominated by the GSC. Students interested in being considered for the Presidential Fellowship should state their interest to their advisor or GSC chair.

**Travel Support Grants for HCS Students.** Travel support grants, to aid graduate students in presenting their research at professional meetings, are available on an annual basis by request to the GSC Chair. The amount of the award is subject to the availability of funding. Each student is eligible to receive one travel grant per degree. The grant is intended to support the presentation of an oral or poster presentation, usually during the student's final year of their program, or to attend a required interview for a prestigious fellowship award. Written requests should state the rationale for the travel and provide an estimate of total expenses. When appropriate, an abstract should be attached to the letter upon submission. The request should be submitted to the GSC Chair and copied to the Graduate Program Coordinator at least two weeks prior to the intended date of departure.

GTAs should be encouraged to provide feedback to faculty concerning the course. The University Center for Academic Teaching (UCAT) offers training seminars for incoming GTAs. An outstanding GTA award (<http://www.gradsch.ohio-state.edu/Depo/PDF/GATAGuidelines.pdf>) is available (GTAs can nominate themselves), as are informational sessions about constructing a professional teaching portfolio.

# Appendix

Graduate forms

**INSERT**

## HCS Graduate Student Important Milestones

### M.S. (thesis option):

- Form SAC by the end of the first semester
- Prepare Graduate Course Program by the end of the first semester
- Complete colloquium (i.e., research proposal presentation) by the end of the second semester
- Complete thesis, exit seminar, and thesis defense

### Ph.D.:

- Form SAC by the end of the first semester
- Prepare Graduate Course Program by the end of the first semester
- Complete colloquium (i.e., research proposal presentation) by the end of the fourth semester (including summer).
- Complete candidacy exam, recommended by the end of the second year, but must be before end of the third year. Option to complete “questions” (open or closed book) or “proposal” options, as determined jointly by the student, advisor and SAC.
- Complete dissertation, exit seminar, and thesis defense

### Degree Progress Checklist – M.S. (Thesis)

- Select your SAC by the end of your first semester. Fill out Form 1 and send to the Graduate Program Coordinator.
- Complete your Graduate Course Program by the end of your first semester. Fill out [Form 2](#) and send to the Graduate Program Coordinator.
- Complete your colloquium by the end of your second semester.
- Submit your application to graduate no later than the third Friday of the semester/term you plan to graduate (see [Graduate Calendar](#)) via [GRADFORMS](#).
- Submit your thesis to your SAC 3 weeks prior to your oral defense date. Your SAC will confirm your dissertation is defensible by 1 weeks prior to your oral defense date. The thesis should be formatted according to the Graduate School [document preparation guide](#).
- Send an email to the department announcing your defense date and time by **X**.
- Complete your exit seminar and oral defense.
- Ensure that all members of your SAC approve the Report on Final Exam via [GRADFORMS](#).
- Incorporate edits requested to your dissertation by your SAC.
- Ensure that all members of your SAC approve the Report on Final Document via [GRADFORMS](#).
- [Submit your thesis](#) electronically to the Graduate School via OhioLINK.

### Degree Progress Checklist – Ph.D.

- Select your SAC by the end of your first semester. Fill out Form 1 and send to the Graduate Program Coordinator.
- Complete your Graduate Course Program by the end of your first semester. Fill out [Form 2](#) and send to the Graduate Program Coordinator.
- Complete your colloquium by the end of your second semester.
- Submit your application to graduate no later than the third Friday of the semester/term you plan to graduate (see [Graduate Calendar](#)) via [GRADFORMS](#).
- Submit your dissertation to your SAC 4 weeks prior to your oral defense date. Your SAC will confirm your dissertation is defensible by 2 weeks prior to your oral defense date. The dissertation should be formatted according to the Graduate School [document preparation guide](#).
- Submit your Application for Final Exam at least 2 weeks prior to your oral defense date via [GRADFORMS](#).
- Contact your Graduate Faculty Representative (assigned to you by the Graduate School, usually around 1 week before the final exam), send them a copy of your dissertation, and share the date, time, and place of your final defense.
- Send an email to the department announcing your defense date and time by **X**.
- Have your dissertation checked for [formatting](#) by the Graduate School.
- Complete your exit seminar and oral defense.
- Ensure that all members of your SAC approve the Report on Final Exam via [GRADFORMS](#).
- Incorporate edits requested to your dissertation by your SAC.
- Ensure that all members of your SAC approve the Report on Final Document via [GRADFORMS](#).
- [Submit your dissertation](#) electronically to the Graduate School via OhioLINK.

[Graduate School final semester checklist](#)