

# **Management Sciences Department Ph.D. Curriculum and Program Requirements**

## **Introduction**

The Management Science Department at Ohio State's Fisher College of Business (FCOB) develops leading scholars in the field. The PhD program offered through this department is one of the oldest programs in the world and has produced several eminent scholars in the discipline. A major strength of this program is the consistency of placement of the graduating students in top research schools. Like its faculty, many of its alumni have had very productive research careers, publishing regularly in top-tier journals, holding editorial positions as top journals, and holding leadership positions and earning fellowships at the most prestigious societies in our field.

A key component of our success is our long-standing reputation as producers of rigorous problem-driven research aimed at generating insights, often by working directly with industries and organizations. Our Ph.D. program is designed to provide our students with the capabilities and motivation to publish in leading academic and practitioner journals for years to come, not just earning jobs at top research schools but earning tenure at them as well. As such, we place a strong emphasis not only on research methods but also on learning directly from our productive faculty not just about the science but also about the art of research. Our department also works closely with industry-academic centers, such as our own department's [Center for Operational Excellence](#), the [Risk Institute](#) and the [National Center for the Middle Market](#), to form strong collaborations with well-known organizations within and outside Ohio.

While our focus is on empirical research, we do believe that all faculty performing research in OM need to have some understanding of operations research methods. As such, our program includes some exposure to analytical methods. Students wishing to pursue mathematical modeling approaches to their research may receive training not only from our faculty that do perform such research, but also from other departments across campus.

To learn general facts about the Ph.D. program in business administration at Fisher College of Business, please consult: <https://fisher.osu.edu/graduate/phd-programs>

To learn more about our program, please consult: <https://fisher.osu.edu/academic-departments/management-sciences/operations-management-phd>

To learn more about our department, please see: <https://fisher.osu.edu/academic-departments/management-sciences>

## PhD Program Curriculum

The first two years of the PhD program set the foundation for the student to develop into an excellent scholar. At Ohio State, we offer a very strong problem-driven research curriculum. The curriculum comprises of 5 courses that are considered body of knowledge (BOK) for our students as well as 2 research methods (Methods 1 & 2) customized to OM research. It also offers students some flexibility to develop their research interests during the first two years.

### **Courses taught by Fisher Faculty:**

Our curriculum intentionally takes advantage of our large pool of research-active faculty in the college. Students will typically take two semester-length seminars each semester for the first two years; often one 14-week seminar will be divided into two seven-week seminars. Seminars will sometimes be co-taught by multiple faculty members. Over two years, this amounts to eight semester-length classes. These eight seminars are broken down as follows:

### **Operations Management Methods I & II Seminars (BUSGMT 8240 & BUGMT 8241):**

The two methods seminars will be taught during the first and second fall semester of the program. This will introduce the student to several research methods and topics during the first two years of the program. The purpose of these seminars is to show the application of the research methods in OM discipline. The following topics will be covered in these two seminars and these topics will be evaluated and updated on a continuous basis by the department faculty.

- Qualitative/case study research
- Experimental research
- Survey-based research
- Research employing secondary data sources
- Analytical Research Methods

On both occasions, the students will be exposed to the fundamentals of theory building, philosophy of science, and how to develop a good research design.

### **Operations Management “Body of Knowledge” Seminars**

These semester-length seminars (which will often be “team-taught”) are intended to cover the body of knowledge of OM. The PhD committee comprising of all research active faculty will refine this body of knowledge on a regular basis. For fall 2018 academic year, the following five classes will be taught by the faculty.

- I. **BUSMGMT 8230 & 8231: Strategic Management of Operations I & II:** Linking operations to the corporate strategy, dimensions of operations strategy, competing on operations, organizing operations for effectiveness, make-buy and location decisions, vertical integration decisions, and measuring operational effectiveness

- II. **BUSMGT 8232 & 8233: Operations Planning and Control I & II:** Fundamental and classical operations management/operations research topics such as inventory management, warehouse and facility location, vehicle routing, MRP, and forecasting.
- III. **BUSMGT 8234 & 8235: Innovation & Fundamentals of Operational Excellence:** Portfolio management, new product development, platform economies, managing NPD teams, distributed innovation, innovation implementation, process innovation, quality management, lean-Six Sigma, designing operations to support and sustaining innovation, integrating technology into operations.
- IV. **BUSMGT 8236 & 8237: Service Operations I & II:** Designing effective service delivery models, service quality, measuring service performance, service profit chains, revenue management, sharing economy, healthcare operations, retail operations, and IT service operations.
- V. **BUSMGT 8238 & 8239: Supply Chain Management I & II:** Introduction to supply chain essentials, supply chain design and management, buyer-supplier contracts, supply chain strategy, matching supply and demand, behavioral issues in supply chains

**BUSMGT 8242 Seminar Speaker Series (1 class/year):**

This 1.5 semester credit course (spread over a year) takes advantage of our department's seminar series, where we bring in ~6 top scholars from all around the world. This provides our students an opportunity to learn more about contemporary research topics and methods. The students will also use this seminar series time to cultivate their own research ideas (Refer to Summer Research 1&2 for more details)

**Courses not taught by Fisher Faculty:**

In addition, we expect students to meet the requirements for a graduate minor in Economics or Statistics (see descriptions below). For most students, we require the Econ "boot camp" offered in late July-August prior to the first year.

<https://economics.osu.edu/sites/economics.osu.edu/files/EconGradMinorPP2012Semester.pdf>

[http://www.stat.osu.edu/sites/default/files/prog\\_guide\\_20160823.pdf](http://www.stat.osu.edu/sites/default/files/prog_guide_20160823.pdf)

We require all students take a graduate-level class in linear programming (IE 5200) from our Industrial Engineering department during the fall semester of their first year.

With permission, students can request to take another minor or to be waived from the minor for an equivalently rigorous selection of courses.

Depending on the student's progress there should be room for up to three additional courses in their first two years during the regular semester, and possibly additional courses in the summer. Further, students often opt to take courses after their second year as needed for their research interest and desires.

## Summer 1 Research

The first two years of the program will also offer ample opportunities for the student to cultivate their research interests working closely with the OM faculty. Specifically, the first year summer plan will help the student focus on a research topic that is of interest to them. The plan for this summer will be set based on the discussions between the student and the PhD Coordinator. This meeting will likely to occur during the **month of March (Students are expected to set up a meeting with the PhD Coordinator to discuss this in detail)**. Upon this discussion, an agreement is reached as to which faculty member will oversee the development of their “first-year presentation” during the summer. This same faculty member will likely be the RA advisor for the summer. By the first Friday of fall semester, the student presents a research idea to a group of select faculty in an informal brown bag. The purpose of this presentation is to both evaluate the student progress in the program and also provide feedback on the student’s next steps.

## Summer 2 Research Paper

By August 1<sup>st</sup> of their second year, the student is expected to have a more complete paper, approved by the PhD coordinator and two other faculty members. This paper can take three distinct forms: (1) A fully completed empirical paper using data or a well formulated analytical model (2) A meta-analysis (publishable quality) on a topic identified by the student highlighting the specific gaps in the literature that further advances the knowledge on the topic. (3) A theory development paper that offers novel insights to the operations management literature. Examples of the three forms of papers will be available to the students upon entry.

The seminar speaker series that runs across both fall and spring semesters can be used to develop this idea. The coordinator of the seminar speaker series, the faculty working with the student on the paper and the PhD Coordinator **(and others as deemed necessary)** will offer feedback and help the student develop the paper over the year. Students whose papers do not meet this requirement may be advised not to sit for their general exams.

## General Exams

In the summer after the student’s second year (specifically the week before the beginning of the fall semester), they will sit for written exams, to be followed by oral exams. These will require the student to demonstrate competence in all areas in which they received training in the first two years. The target date for this exam is mid-August, although the exact timing may vary. NOTE: As part of the oral exams, students will provide a ~30 minute presentation of their “second-year paper” to the faculty.

## Year 1 & Year 2 Class Schedule for Operations Management PhD Students

Figure 1 gives an overview of one possible class schedule for the student during the first two years in the program.

**Figure 1: Two-Year Course and Program Structure for Mgmt. Sciences PhD Student**

Year	Fall	Spring	Summer
Year 1	Strategy 1 & 2 (3 credits)  Method 1 (3 credits)  Linear Prog. (from IE Department: 3 credits)  STAT (6201)/ECON 1 (3 credits)	Service Ops. 1 & 2 (3 credits)  Innovation & Fundamentals of Ops. (3 Credits)  STAT/ECON 2 (3 credits)	Summer 1 Research
	Seminar Speaker Series 1 (1.5 credits)		
Year 2	Supply Chain 1 & 2 (3 Credits)  Method 2 (3 credits)  STAT / ECON 3(3 credits)	Planning & Control 1 & 2 (3 credits)   STAT/ECON 4 (3 credits)	Summer 2 Research Paper  General Exams
	Seminar Speaker Series 2 (1.5 credits)		

## Other Program Requirements

- **Research and Teaching Assistantships (RAs and TAs):** Students are expected to work up to 20 hours per week as RAs and/or TAs each semester and summer. This work is directed under a faculty member, who has the discretion to design the work. It can be related to his/her teaching and/or research. The student should not expect authorship or other benefits from RA work, unless both parties agree and the student continues to deliver well beyond the semester of RA work. Some faculty may seek projects that are close to the student's interest, but this is by no means required and entirely at the faculty member's discretion.
- Students must develop their skills as demonstrated by strong grades in their classes, and they must successfully deliver required RA assignment. We expect and strongly encourage individual research to be developing in the first two years, but note that individual research will not be an excuse for poor performance in classes or failure to deliver RA assignments.
- **MBA Classes:** For students with no business background and no MBA, they need to audit the core MBA operations class, finance class (and/or the integrated core course if it is implemented), and possibly electives to be discussed with the PhD coordinator.
- After completion of the comprehensive exams, the student will typically formally choose an advisor and a committee who will be the key evaluators of the student's progress going forward. Classes are often taken after the second year based on student interest, but the student should avoid taking too many classes as that may impede research. The Ph.D. coordinator will continue meeting with the student at least once a year after the second year. The student is encouraged to meet with as many faculty as possible to seek advice on research and career.
- **Conference Travel:** Our students typically attend multiple conferences during a given year. These conference travels can start as early as the second year in the program depending on the student's research and course progress. The department will fund up to one conference/year or \$750 towards the student's conference travel. It is very common for the faculty working with the student to fund the student's other conference expenditures.
- **Small Grant Awards:** Our students are also eligible for alternative research funding through the college small research grants. These grants (up to \$1000/ year) can be used by the student for supporting their research activities that may include conference travel, purchasing database, conducting experiments etc.
- **Computer/Laptop Purchases:** There will be funds available for the incoming student to purchase a desktop or a laptop which can be used during the course of the program. The student can work with the department administrator upon admission on these purchases.

- **Dissertation Proposal:** Once the student has formed their committee, and their dissertation plan is finalized, they should formally “propose” their dissertation. It is at the discretion of the committee to decide who to invite to this proposal defense. In general, however, our view is that the more faculty involved, the better. Ideally, this will be done before entering the job market so the student can indicate to prospective employers that they have defended their proposal.
- **Brown Bag Presentations:** Students who have completed their comprehensive exam will begin working with their faculty advisor(s) on their dissertation. It is highly recommended that they share their progress during brown bag presentations. These sessions will serve as an important opportunity to receive feedback from the rest of the faculty. The student in consultation with her advisor (and committee) can use this feedback as necessary in building a stronger research portfolio.
- **Job Market Preparation:** Our students who have experienced the job market, along with faculty, have developed a formal process to pass down knowledge about the job market process to all the students in the program. This occurs in ~May, before graduating students leave and before the job market accelerates for any students planning to go on the market in the coming year. Junior faculty, especially brand new hires, are encouraged to provide input to the documents and attend the meeting.
- **Dissertation Defense:** The defense typically involves the committee and one outside “graduate faculty rep” as required by the graduate school. The committee is typically 3 faculty from Fisher and one faculty outside of Fisher, although any committee composition meeting Ohio State requirements is acceptable. Timing of successful completion of this defense will dictate timing of graduation.

## Important Dates during the PhD Program

Year	Dates	Event
Year 1 (Fall)	1 <sup>st</sup> Friday of Every Month	Meet with the PhD coordinator to discuss the course and program progress.
Year 1 (Spring)	1 <sup>st</sup> Friday in March	Discuss Potential Summer RA topics with PhD coordinator to explore synergies with the current faculty
	Mid-April	Meet with RA advisor to develop Summer RA plans
	1 <sup>st</sup> week of May	One page summary of proposed RA plans submitted to the PhD coordinator
Summer 1	Meeting vary by the faculty-student schedule	Work with the assigned faculty on the summer research project
Year 2 (Fall)	1 <sup>st</sup> Friday in September	Present the Summer RA work to the rest of the faculty.
	Last Friday in September	PhD coordinator gives feedback from the rest of faculty to the student. Coordinator works with the student to determine their second year paper structure & committee
Year 2 (Spring)		
	Last week of April	Student selects the committee for 2 <sup>nd</sup> year paper
Summer 2	August 1	Second year Paper due
	Friday before the beginning of Fall Semester	Comprehensive exam (Oral defense will be scheduled typically 3 weeks after the comprehensive exam)
Years 3-5	1 <sup>st</sup> Friday in September	Research presentation on their dissertation work to the rest of the faculty.