ECONOMICS, PH.D.

The doctoral program in economics offers a firm grounding in the theory and tools of economics as well as in a variety of fields of specialization. Facilities within the department include faculty and student offices, a library of core materials, and a computer center. The size of the department, the breadth of specialties represented among the faculty, the abundance of research workshops and research facilities, and the related programs of other university departments combine to provide an unusually supportive atmosphere for study and research. Students are encouraged to work together; study groups for course work and preliminary examinations are standard. The department currently has roughly 35 faculty members and approximately 150 graduate students. All doctoral students are assigned desk space. The department and students sponsor social events throughout the year. A graduate advisor is on staff to help students with problems and questions.

The first year of doctoral study concentrates on economic theory and statistics courses. In addition, the department holds seminars for first-year doctoral students that feature faculty presentations. The presentations provide first-year students the opportunity to meet the faculty and learn about research in each field. The department offers seven fields of concentration: econometrics, industrial organization, international economics, labor economics, macroeconomics, microeconomic theory, and public economics.

ADMISSIONS

Applicants to the doctoral program receive full funding consideration if the application form is submitted and graduate school application fee paid by December 5 for fall term admission.

Doctoral admission requirements include a bachelor’s degree, plus three semesters of calculus, a semester of linear algebra, and a semester of mathematical statistics, which must be completed before entering the program. Mathematics preparation should include multivariate calculus, elementary probability, and regression analysis. Applicants must submit three letters of recommendation and Graduate Record Exam (GRE) scores. Additional information is available on the Department of Economics website (https://econ.wisc.edu/doctoral/admissions).

GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/admissions).

FUNDING

GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (https://grad.wisc.edu/funding) is available from the Graduate School. Be sure to check with your program for individual policies and processes related to funding.

PROGRAM RESOURCES

Applicants to the doctoral program receive full funding consideration if the application form is submitted and graduate school application fee paid by December 5. The department offers a number of financial support packages for the first year of study to incoming doctoral students with outstanding records. These packages guarantee support for five years of study and take the form of fellowship, teaching assistantship, research assistantship, or a combination of the three. All continuing support is based on the condition that a student is making good progress in the program.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Mode of Instruction Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evening/Weekend</strong>: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.</td>
</tr>
<tr>
<td><strong>Online</strong>: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.</td>
</tr>
<tr>
<td><strong>Hybrid</strong>: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.</td>
</tr>
<tr>
<td><strong>Accelerated</strong>: These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.</td>
</tr>
</tbody>
</table>

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>51</td>
</tr>
<tr>
<td>Residence</td>
<td>32</td>
</tr>
</tbody>
</table>

Economics, Ph.D.

1
Minimum Graduate Coursework Requirement
Half of degree coursework (26 credits out of 51 total credits) must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide.

Overall Graduate GPA Requirement
3.00 GPA required.

Other Grade Requirements
None.

Assessments and Examinations
The micro and macro theory preliminary examinations must be taken in early summer following the first year of graduate study. Students who do not pass both exams on this first attempt retake the exam(s) they did not pass in late summer. A third attempt is granted only if the student has passed one exam after the second attempt. Students must earn a B average in the first year econometrics courses; retaking the applicable course(s) during the second year if the two-course GPA average is less than 3.0. To maintain satisfactory progress through the program, each student must have the field paper approved by the student's major field by December 15 of the third year of study and must complete a three-signature dissertation proposal by December 15 of the fourth year of study. Consult the department website (http://www.econ.wisc.edu/grad/program_guide.html) for additional information.

Language Requirements
No language requirements.

Doctoral Minor/Breadth Requirements
All doctoral students are required to complete a minor.

For more information, see the economics department minor fields page (http://www.econ.wisc.edu/grad/minor%20fields.html).

REOUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 711</td>
<td>Economic Theory-Microeconomics Sequence</td>
<td>3</td>
</tr>
<tr>
<td>ECON 712</td>
<td>Economic Theory-Macroeconomics Sequence</td>
<td>3</td>
</tr>
<tr>
<td>ECON 713</td>
<td>Economic Theory: Microeconomics Sequence</td>
<td>3</td>
</tr>
<tr>
<td>ECON 714</td>
<td>Economic Theory: Macroeconomics Sequence</td>
<td>3</td>
</tr>
</tbody>
</table>

Mathematics Economics
ECON 703 Mathematical Economics I 3-4

Statistics
ECON 709 Economic Statistics and Econometrics I 3-4
ECON 710 Economic Statistics and Econometrics II 3-4

ECONOMETRICS

Econometrics is concerned with the methods for empirical analysis in economics. The program provides strong preparation and training for students interested in econometric methods and theory, and as well as for students whose primary interest lies in applied economics.

All doctoral students in economics, regardless of field, take one year of econometrics (ECON 709 Economic Statistics and Econometrics I and ECON 710 Economic Statistics and Econometrics II, which has an enrollment of about 40–50). In their second year of study, students who choose econometrics as their major field, or who simply want more advanced training, will take ECON 715 Econometric Methods, which covers the core theory of nonlinear estimation and inference. They will also take one or more of ECON 716 Econometric Methods, ECON 718 Topics in Applied Econometrics or ECON 719 Economic Statistics and Econometrics III, which cover selected topics on the frontier of theoretical and applied econometrics. These courses have enrollments of about 10–20 students.

The scope of econometrics at Wisconsin is suggested by a list of recent research projects by the econometrics faculty (often with the assistance of graduate students). These include the generalized method of moments, nonparametric likelihood, bootstrap methods, interactions-based models, macroeconometrics, nonlinear time series, and semiparametric estimation. In addition, studies conducted by other faculty members and students—in public economics, labor, industrial organization, macroeconomics, trade, and microeconomics—often draw on appropriately sophisticated econometric techniques.

The econometrics program can be augmented by course offerings in the statistics department.

These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

INDUSTRIAL ORGANIZATION

The standard graduate preparation in industrial organization consists of two courses. One course presents an overview of the field, focusing on topics where theoretical models have successfully been taken to data. These topics include: static oligopoly models of price/quantity competition in homogeneous and differentiated good markets, models of product search and advertising, bilateral oligopoly models with contracting, models of contracting with asymmetric information, auctions, models of price discrimination, static and dynamic models of entry and exit. The second course focuses more on the details of how to estimate these models and, in particular, on the treatment of unobservables. The course also covers recent developments in the field. The main goal of this course is to transition students from being consumers of research to producers of research in industrial organization.

The empirical approach of industrial organization has shifted from discovering robust empirical regularities that hold across a broad cross section of industries to the detailed study of individual markets based on a theoretical model. This reflects the belief that market structure and firm behavior are sufficiently diverse across industries that they are best studied in the context of a well-defined product and geographical market. The methodology for studying markets at this level involve specifying an equilibrium model of firm behavior and applying this model to data by testing its predictions (reduced form) and/or by estimating its primitives (structural), which are typically consumer preferences and firm costs. Knowledge of model primitives is used to construct counterfactuals and conduct policy analysis. The main analytical tools are game theory, econometrics, and computational methods, and students would benefit from taking advanced courses in these subjects.
For students planning to write a dissertation in industrial organization, the field requirement is a paper to be completed during the summer of the second year. Upon completion of course work and the field requirement, students are expected to actively participate in the weekly industrial organization workshop and seminar. The workshop is dedicated to presentations by graduate students who are working on dissertations in industrial organization and by faculty members; the seminar is for invited speakers from other universities.

1 These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

INTERNATIONAL ECONOMICS 1

International economics is divided into the trade side and the macroeconomics side. The trade side considers the causes and consequences of international trade and of policies that alter trade patterns. A variety of both general equilibrium and partial equilibrium models featuring selected distortions to various competitive norms are used to explore these issues, and empirical evidence relating to the theories is also emphasized. Recent work analyzes theoretical and empirical investigations of trade and factor movements in the presence of firm-level heterogeneity, dynamics, uncertainty, endogenous government policy reaction, strategic interaction across governments and firms, and the design and purpose of international trade agreements. Economics 871 introduces students to the core of the real side of international economics.

The macroeconomics side of international economics puts special focus on the role of financial markets and monetary variables in open economies. It devotes attention to exchange rate determination and real and financial interaction among open economies. It treats traditional and current analytical approaches to understanding the macroeconomic consequences of monetary policy, fiscal policy, and policy coordination across borders; international capital mobility and default; economic growth; and, optimal portfolio choices. The role of credit frictions on international allocations and the causes and consequences of international financial crises and "sudden stops" are examined. ECON 872 Advanced International Economics is the macroeconomics analogue to the trade course ECON 871 Advanced International Economics.

ECON 899 Recent Advances in Economics covers advanced topics and treatments in international economics, and its specific content depends on the instructor teaching it.

The weekly international economics workshop, ECON 977 Workshop in International Economics/ECON 978 Workshop in International Economics, is an integral part of the program, in which both faculty and advanced graduate students actively participate.

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LABOR ECONOMICS 1

Labor economics has a long and distinguished history of scholarly research and the application of this research to policy issues. Wisconsin has traditionally been an important center for this work. Students majoring in this field are expected to (eventually) understand relevant institutional features of labor markets, sources of data and econometric techniques needed to draw inferences from these data, and the models of rational economic behavior needed to organize coherent economic thinking about labor markets.

The core material deals with labor supply decisions made by rational households, labor demand decisions made by profit-maximizing firms, and the equilibrium wage differentials and employment patterns implied by these decisions when markets are competitive. Applications include the analysis of wage differentials, life-cycle age-earnings profiles, and returns to human capital investments. Further topics, emphasizing deviations from the competitive ideal, include incentive schemes, discrimination, bargaining between workers and employers to divide monopoly rents, search and unemployment.

There are two required courses for the labor major: ECON 750 Labor Economics and ECON 751 Survey of Institutional Aspects of Labor Economics, usually taken in the second year of the program. Both theoretical and empirical research are emphasized in these courses, and students begin work on a research paper that will help lay the foundation for dissertation research. These courses are supplemented by an active workshop program featuring speakers from various universities and research centers (including Wisconsin).

Labor economics is complemented by several research institutes connected with the department. These institutes are often a source for research assistantship positions and support for dissertation research for labor majors.

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MACROECONOMICS AND MONETARY ECONOMICS 1

Macroeconomics and monetary economics at Wisconsin emphasizes research on dynamic stochastic environments, as these seem central to understanding private sector and policy determinants of growth, business cycles, income distribution and other central topics. The graduate program in macroeconomics and monetary economics equips students to conduct research in this lively and rapidly changing field through a variety of advanced courses. The course selection varies from year to year, but typically it includes at least one course emphasizing macroeconomic theory and one course emphasizing empirical methods in macroeconomics. In recent years, the field has offered courses in:

1. theory and econometrics of environments comprised of interacting agents, with a focus on inequality dynamics;
2. monetary and financial theory, providing conceptual foundations for understanding financial market equilibria as well as the effects of alternative macroprudential and monetary policies
3. methods of modeling and coping with uncertainty, imperfect information, and private information, and their implications for the design of economic policy;
4. computational or econometric methods, covering tools that have wide applicability in macroeconomics and other areas of economics;
5. topics in macroeconomics, including consumption, time use and the aggregate relevance of micro shocks.

In addition to the courses offered in the department (in general up to five per year), the field recognizes courses taken outside the department (e.g., mathematics courses for those interested in theory, probability and statistics, and courses for students planning to work on empirical topics) as well as other fields.
Students are required to participate in the weekly macro workshop. Students are encouraged to present their own research in this seminar. In addition, depending on demand, the field organizes a brown bag seminar designed to encourage students to present research at an early stage, and individual faculty members regularly form reading groups to discuss tightly focused bodies of state of the art research to help facilitate the development of dissertation ideas.

1 These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

**MICROECONOMIC THEORY**

Microeconomic theory in a broad area that examines foundational issues in economic modeling and provides tools for applied economic research. The field includes partial and general equilibrium theory, game theory, the economics of incentives and information, and decision theory. Students often find it helpful to take courses in the microeconomics field to acquire the technical skills required to do rigorous applied work. Advanced courses in microeconomics offered by the economics department change as the frontiers of the subject and the interests of the faculty evolve.

1 These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

**PUBLIC ECONOMICS**

Public economics is the study of the government’s role in the economy, particularly through tax and expenditure policy. Wisconsin has a long and distinguished tradition of teaching and research in public economics. Scholars in public economics examine a wide range of issues. Research by members of the Wisconsin public economics faculty examines, for example, the behavioral effects of taxation social insurance, savings, altruism, anti-poverty policy, education, peer effects, income distribution, and issues in health economics.

There are two required courses for the public economics field, ECON 741 Theory of Public Finance and Fiscal Policy and an applied econometrics or field topics course. These courses examine theoretical and empirical methods in the field. Specific topics will vary across years, but the sequence will typically cover optimal taxation; the effects of taxation on various aspects of household behavior, such as labor supply, consumption and saving, charitable giving, and household portfolio behavior; social insurance—insurance provided by the government for longevity risk, work-related injuries, unemployment, and disability; fiscal federalism, local public finance, and the provision of public goods; and the rationale and effectiveness of government efforts to ameliorate poverty. The two-course sequence will also typically address topics of active research interest in the field, in broad areas of education and health policy, for example. Like other fields of concentration at Wisconsin, in their second year, students begin work on a research paper. The public economics field also holds an active seminar series featuring invited guests from various universities and research centers (including Wisconsin).

There are many resources across campus that may be of interest to students writing dissertations in public economics. The Institute for Research on Poverty (IRP) has a graduate student fellows program where students receive interdisciplinary training in poverty-related research. Public faculty and students also participate in the Interdisciplinary Training Program in the Education Sciences (ITP).

1 These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

**POLICIES**

**GRADUATE SCHOOL POLICIES**

The Graduate School's Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

**MAJOR-SPECIFIC POLICIES**

**GRADUATE PROGRAM HANDBOOK**

The Graduate Program Handbook (https://econ.wisc.edu/doctoral/program-guidelines) is the repository for all of the program's policies and requirements.

**PRIOR COURSEWORK**

**Graduate Work from Other Institutions**

Graduate coursework from other institutions will be evaluated on a case-by-case basis by the faculty graduate committee in the Department of Economics. With graduate committee approval, students are allowed to count no more than 15 credits of graduate coursework from other institutions. Coursework earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

**UW–Madison Undergraduate**

UW–Madison undergraduate coursework will be evaluated on a case-by-case basis by the faculty graduate committee in the Department of Economics. With graduate committee approval, students are allowed to count no more than 7 credits of coursework numbered 700 or above taken as a UW–Madison undergraduate. Coursework earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

**UW–Madison University Special**

Coursework numbered 700 or above taken as a UW–Madison Special student will be evaluated on a case-by-case basis by the faculty graduate committee in the Department of Economics. With graduate committee approval, students are allowed to count no more than 15 credits of coursework numbered 700 or above taken as a UW–Madison special student. Coursework earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

**PROBATION**

The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could
result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

**ADVISOR / COMMITTEE**

Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

An advisor generally serves as the thesis advisor. In many cases, an advisor is assigned to incoming students. Students can be suspended from the Graduate School if they do not have an advisor. An advisor is a faculty member, or sometimes a committee, from the major department responsible for providing advice regarding graduate studies.

A committee often accomplishes advising for the students in the early stages of their studies.

**CREDITS PER TERM ALLOWED**

15 credits

**TIME CONSTRAINTS**

Students must complete the final oral exam by May 15 of the seventh year of study.

Doctoral degree students who have been absent for ten or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

**OTHER**

n/a

**PROFESSIONAL DEVELOPMENT**

**GRADUATE SCHOOL RESOURCES**

Take advantage of the Graduate School's professional development resources (https://grad.wisc.edu/pd) to build skills, thrive academically, and launch your career.

**PROGRAM RESOURCES**

**PLACEMENT**

The department has a well-organized placement service. Each year a faculty member functions as the placement officer. He or she is assisted by the placement assistant who coordinates the sending of resumes and letters of recommendation, makes available job vacancy information, and offers general guidance. Each job market candidate gives a regular faculty research seminar on his or her primary research paper; these seminars are typically widely attended by faculty and students and provide a rigorous "test run" for the job market paper. To prepare for the job market interviews mostly conducted at the winter meetings of the American Economic Association, all students are given mock "job market interviews" by faculty members. Students also receive extensive help from their primary advisor, who in addition to providing general counsel during the process of job search, typically is instrumental in contacting colleagues at other universities, or in bringing the student to the attention of the extensive network of former Wisconsin Ph.D.'s employed in universities, colleges, government, and the private sector. Students also benefit from the fact that many government agencies, including the Board of Governors, the World Bank, the International Monetary Fund, and several Federal Reserve banks often actively recruit on campus. Finally, Wisconsin students typically self-organize additional presentations of job market papers, providing one another with additional opportunities for practice.

Many graduates accept research positions in academia, while others gain employment with international organizations, government, or private consulting firms. Between 2004 and 2015, placements at U.S. universities have included positions as assistant professors at Yale University, Northwestern University, University of California at Berkeley, University of Michigan, University of Pennsylvania, University of California—San Diego, Washington University in St. Louis, University of Florida, University of California—Santa Cruz, Tufts University, the University of Washington, University of Iowa, and the University of Virginia. Placements at non—U.S. universities have included University College London, London School of Economics, McMaster University, University of British Columbia, National Taiwan University, and Tsinghua University. Students pursuing nonacademic employment have accepted positions at institutions including the Federal Reserve Board of Governors, the International Monetary Fund, the Congressional Budget Office, US Treasury Department, the Korea Development Institute, Bates White Consulting, Abt Associates, and Mathematica Policy Research Institute.

**LEARNING OUTCOMES**

1. Establishes a firm grounding in economic theory.

2. Exhibits expert depth of knowledge in one of the fields of specialization in the Economics department.

3. Demonstrates command of the tools needed to conduct and assess empirical research in economics.

4. Creates and presents research that makes a substantive contribution to the field.

5. Follows ethical principles of the discipline in using sources in research.

**PEOPLE**

**Faculty:** Professors Blank, Corbae, Deneckere, Engel, Hansen, Hendricks, Kennan, Lentz, Porter, Rostek, Sandholm, Scholz, Seshadri, Smith, Sorensen, Taber, Walker, West, Williams, Wolfe, Wright; Associate Professors Fu, Penta, Quint, Shi, Weretka, Wiswall; Assistant Professors Aizawa, Atalay, Bilir, Freyberger, Gregory, Magnoifi, Mommaerts, Selvsten, Sullivan; Visiting Assistant Professors Alder, Pauley; Affiliate Professors Chinn, Montgomery, Smeeding; Affiliate Associate Professors Schechter, Wallace; Affiliate Assistant Professors Chang, Chung, Sarada