

# GRADUATE STUDIES CATALOG

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University of Wisconsin-Green Bay

■ 1993 – 1995 ■

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## **Effective Dates**

Effective dates for this catalog are 1993 through 1995, or until superceded by another catalog.

Information contained in this catalog was current at the time of its printing. Some of this information may change before the expiration date for the catalog due to action of the University of Wisconsin System Regents and/or the Wisconsin Legislature. New courses may be added and some listed courses may be altered to remain current with needs.

Current fee and tuition information is distributed as far in advance of each session as possible through the *Timetable* or a fee information sheet, both published by the Registrar's Office.

Course information for each session is published in the *Timetable*.

## **For More Information**

**Graduate Studies Office  
Theatre Hall 335  
University of Wisconsin-Green Bay  
2420 Nicolet Drive  
Green Bay, WI 54311-7001  
414-465-2123**

## **Affirmative Action Policy**

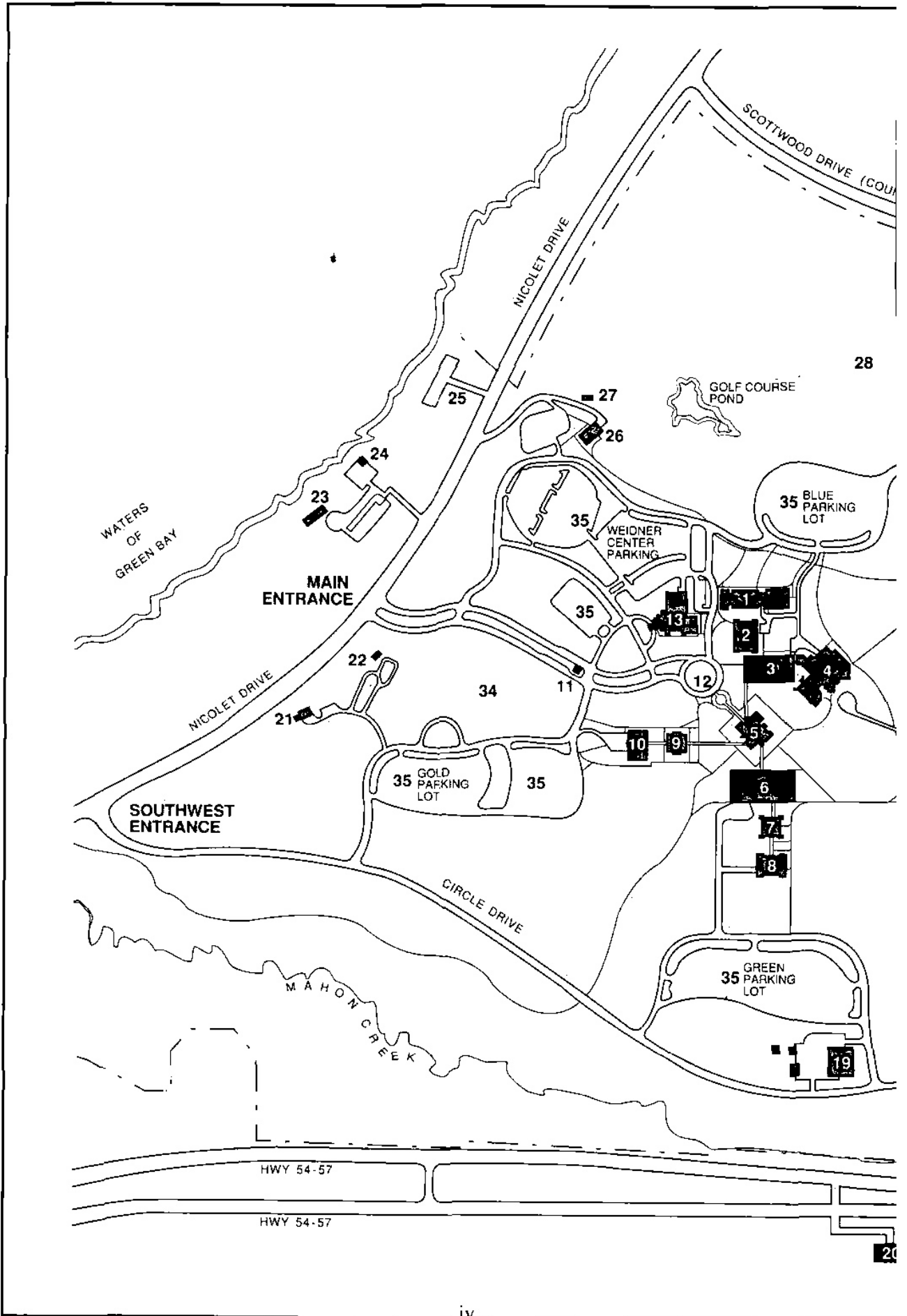
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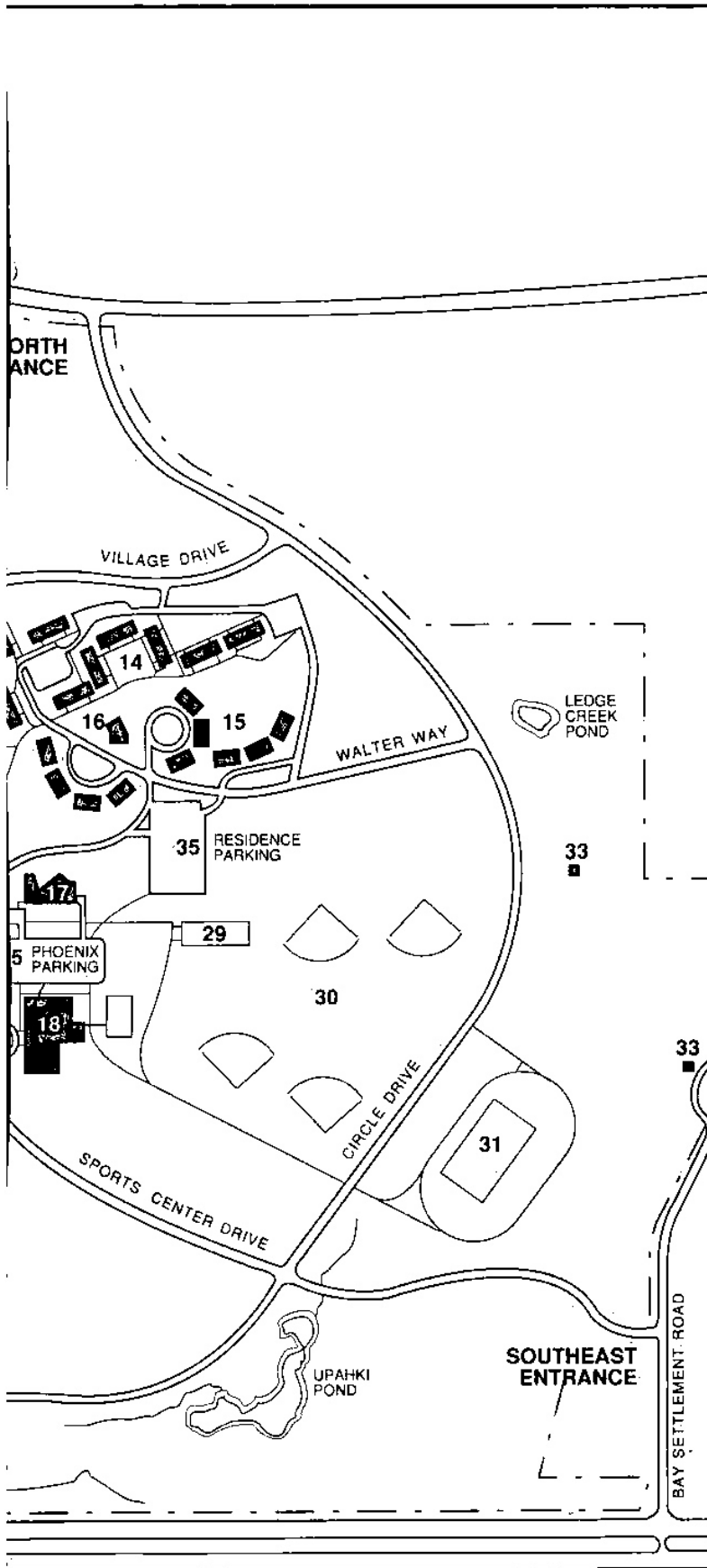
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# ■ Campus Map





### UWGB CAMPUS MAP KEY

1. Studio Arts
2. Theatre Hall
3. Student Services \*
4. Student Union
5. David A. Cofrin Library
6. Instructional Services\*
7. Environmental Sciences
8. Laboratory Sciences
9. John M. Rose Hall
10. L.G. Wood Hall
11. Parking Office
12. Circle Entrance
13. Weidner Center for Performing Arts
14. Student Apartments
15. Student Residence Halls
16. Community Center
17. Ecumenical Center
18. Phoenix Sports Center
19. Physical Plant/Stores
20. Heating/Cooling Plant
21. Children's Center
22. Language House
23. Bayshore Center
24. Dock Facility
25. Communiversity Park
26. Shorewood Center
27. Equipment Service Bldg.
28. Golf Course
29. Tennis Courts
30. Playing Fields
31. Soccer Field
32. Observation Tower
33. Weather Station
34. Amphitheater
35. Parking

\* Building below ground level:  
does not showup on the  
campus skyline

# ■ Academic Year Calendar

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<b>Fall Semester</b>	<b>1993-94</b>	<b>1994-95*</b>	<b>1995-96*</b>
Classes begin	Sept. 7	Sept. 6	Sept. 5
Thanksgiving recess	Nov. 25-26	Nov. 24-25	Nov. 23-24
Classes end	Dec. 15	Dec. 14	Dec. 13
Final exams begin	Dec. 17	Dec. 16	Dec. 16
Commencement (Saturday)	Dec. 18	Dec. 17	Dec. 16
Final exams end	Dec. 23	Dec. 22	Dec. 22
Winter recess	Dec. 24-Jan. 9	Dec. 23-Jan. 8	Dec. 23- Jan. 7
Advising/Registration	Jan. 10-14	Jan. 9-13	Jan. 8-12
Martin Luther King holiday	Jan. 17	Jan. 16	Jan. 15
<b>Spring Semester</b>			
Classes begin	Jan. 18	Jan. 17	Jan. 16
Spring recess	March 12-20	March 11-19	March 9-17
Classes end	May 9	May 8	May 6
Final exams begin	May 12	May 11	May 9
Commencement (Saturday)	May 14	May 13	May 11
Final exams end	May 18	May 17	May 15
<b>Summer Session (8 week session)</b>			
Registration	June 9-10	June 8-9	June 6-7
Classes begin	June 13	June 12	June 10
Classes end	Aug. 5	Aug. 4	Aug. 2

\*These dates may be subject to change. Consult the most recent *Timetable* to confirm dates.

# ■ Introduction

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## Programs and Degrees

The University of Wisconsin-Green Bay offers two types of programs leading to master's degrees.

The first consists of degrees awarded by UW-Green Bay. These are in two distinct areas of study:

- Master of Science in Administrative Science
- Master of Science in Environmental Science and Policy

The second group comprises cooperative programs with the Universities of Wisconsin at Oshkosh and Milwaukee. Course work in these programs normally is completed on the UW-Green Bay campus, but degrees are awarded by the sponsoring institution. Cooperative programs are:

- Master of Science in Administrative Leadership—Educational Administration and Supervision Emphasis (UW-Milwaukee)
- Master of Science in Curriculum and Instruction (UW-Milwaukee)
- Master of Science in Educational Psychology—Counseling (UW-Milwaukee)
- Master of Business Administration (UW-Oshkosh)
- Master of Science in Education—Reading (UW-Oshkosh)

## Philosophy and History

The University of Wisconsin-Green Bay is committed to a distinctive academic plan characterized by a strong interdisciplinary education grounded in the liberal arts. It is a practical education that prepares students to evaluate issues and solve problems. The University has a strong commitment to serve the needs of the region and to extend the learning environment beyond campus boundaries.

Graduate programs at UWGB are offered in areas reflecting particular strengths of the academic program and needs of the region.

In 1965, when the Wisconsin Legislature authorized a new campus of the University of Wisconsin System for Northeastern Wisconsin, Green Bay was already the home of a two-

year University of Wisconsin Center enrolling about 1,000 students. It was integrated with the new University of Wisconsin-Green Bay in 1968. In the fall of 1969, classes opened in the first three buildings of the new campus overlooking the waters of Green Bay east of the city. The University is one of 13 degree-granting institutions in the UW System.

With about 4,890 undergraduate students and 220 graduate students, the University is large enough to offer a diversity of programs, and small enough to offer students an individualized educational experience. The diverse student body includes students from most of Wisconsin's counties, half of the states, and about 30 foreign countries. Nearly one-third of the University's students are over the age of 25. The University has more than 160 full-time faculty, 95 percent of whom have earned a doctorate or its equivalent.

## Accreditation

UWGB is fully accredited by the North Central Association of Colleges and Schools for the bachelor's degree and for the master's degree. Accreditation is granted after a thorough examination of all aspects of a college or university by a team of faculty and administrators from other established institutions.

## Campus

The University is situated on a beautifully landscaped 700-acre site seven miles from the city center of Green Bay, Wisconsin. All of the University's academic buildings have been built since 1969.

The academic center of campus is the eight-story Cofrin Library. Clusters of academic buildings are grouped like points of the compass on the north, south, and west around it. The new Weidner Center for the Performing Arts is adjacent to the Theatre Hall and Studio Arts buildings. The academic buildings and the student union are connected outdoors by plazas and walkways and indoors by a system of concourses. The concourses and ramps and elevators in every building make the University particularly accessible to handicapped students and visitors.

The Phoenix Sports Center, east of the academic buildings, includes the gymnasium, swimming pool, racquet ball courts, team rooms, and other indoor athletic facilities. Tennis courts, baseball and softball diamonds, and other playing fields are nearby. UWGB's soccer team plays its games at Phoenix Field on the campus' east side.

Student apartments and residence halls are near the union and academic buildings and not far from the gym, swimming pool, and other sports facilities.

Canoes, sailboats, and other recreational equipment are available for rent at the University's dock facility on the bay. Also on the bay is Communiversity Park, a picnic and recreation area.

Since the primary buildings are clustered, much of the campus is left open for recreational use. The nine-hole golf course is used in winter for cross-country skiing. Bicycle, skiing, and pedestrian paths connect all parts of the campus.

### **Facilities**

Facilities used by the graduate program, in addition to general classroom and office space, include laboratories, the library, computer center, and a number of ancillary programs or research centers. Each of these is described below.

#### ***Area Research Center***

The Area Research Center of the UWGB Library is a depository for municipal and county manuscript records. These records provide a rich source of organizational information for students of history, genealogy, and local culture. This center is one of the most active units in the network established by the State Historical Society.

#### ***Center for Public Affairs***

The Center for Public Affairs at UWGB provides an opportunity for students to participate in team research, internships, and technical assistance experiences in public policy, politics, government and public management.

Students work with state and local government officials, legislators, public managers and other public professionals in such diverse areas as hazardous materials assessment, recycling and other environmental policies, health care administration, seismic risk assessment, community design and development, zoning analysis, cultural diversity, public opinion surveys and government/business relations. Some of these projects have been funded by agencies such as the National Science Foundation and the Wisconsin Department of Natural Resources; others have been inspired and supported by local hospitals and citizen groups.

The Center works closely with the University of Wisconsin General Extension to develop outreach programs in government affairs, and students have opportunities to participate in some of these activities. The goal of the Center is to provide quality experiences for students and faculty and to serve the need for research, policy analysis, and training for the local community and northeastern Wisconsin.

#### ***Cofrin Arboretum and Natural Areas***

The 270-acre Cofrin Arboretum encircling the campus is a significant resource for field trips, class projects, and individual research. Other University natural areas expand the range of landforms, vegetation communities, and animal habitats available for study.

The Arboretum supports a program of grants for individual student research within the arboretum and natural areas. Students whose proposals gain support may receive up to \$1,000 to carry out their projects. Students present results of completed projects in an annual symposium.

The Arboretum has mature upland forests, a cedar swamp, several types of restored prairie communities, old fields, several ponds and wetlands, a stream, an extensive dolomite outcrop of the Niagara Escarpment, and more than a half mile of shoreline on Green Bay. Other University natural areas include sites on Lake Michigan and in the interior of the Door County peninsula.



Within this diversity are opportunities to study sites that are preserved, areas undergoing restoration and development, and formerly cultivated sites in various stages of colonization by woody plants. A large number of the plant and animal species of northeastern Wisconsin exist in these natural areas.

### **Computing Facilities**

Study and research at UW-Green Bay are well supported by computing facilities. The main computing power for the academic program is supplied by a Digital Equipment Corporation VAX 8530. This system can easily support up to 200 users as well as provide remote services and dial-in capability. It is the backbone for the campus network.

Software capabilities on the VAX 8530 include the programming languages BASIC, FORTRAN, COBOL, PASCAL, C, LISP, and OPS5. Data analysis packages include SAS, MINITAB, LINDO, and MASSBAL. Relational (RDB) and network (DBMS) databases are available, as well as a query language which supports both. Several graphics packages support statistical analysis and mapping classes. Text and graphics output are available through a central line printer, laser printer, and remote printers.

Academic computing supports four microcomputer laboratories with Apple- and IBM-compatible computers. These laboratories are variously equipped with academic software, including programming languages, worksheets, word processing, databases, and engineering and other course-specific applications. Computer lab areas have generous hours for student access. An open lab with both Apple- and IBM-compatible units and a number of mainframe terminals is available when other laboratories are in use.

Several specialized computer laboratories at other locations on campus support instruction in geographic information systems; graphic communications, photography, and the sciences.

### **Data, Video and Voice Network**

A universal wiring system makes Green Bay one of the first UW campuses to put into use a campus-wide network for data, video, and voice. Data and voice wiring connects all classrooms, laboratories, faculty offices,

administrative areas, and on-campus student housing. Video wiring makes possible a campus video network among classrooms, laboratories, student residential complex, and some conference rooms.

Data access is the most visible enhancement offered by the system. The network enables students, faculty, and staff to use all of the campus computing resources regardless of their location. The network is accessible by dial-in from off-campus as well as from campus locations.

Among functions provided by the network are:

- microcomputer to campus academic mainframe;
- microcomputer to the campus library catalog;
- microcomputer to other UW System library card catalogs and to other library card catalogs, including all Big Ten schools;
- microcomputer to remote databases such as Dow Jones, Chemical Abstracts, and many others;
- microcomputer to various supercomputers;
- microcomputer to microcomputer to permit joint work, electronic hand-in of papers, electronic conferencing, and the like;
- microcomputer to campus resources such as laser printing and mainframe tape drives.

### **Herbarium**

The UWGB Herbarium houses a collection of over 20,000 specimens of vascular plants and provides many opportunities for student research, collection, and cataloging projects. Students have collected and prepared a large number of specimens from northeastern Wisconsin, including endangered and threatened species. They continue to catalog specimens from the Cofrin Arboretum, Toft Point, and other UWGB natural areas. With the addition of computer support, students are also able to map the distribution of plants and their responses to environmental changes. Specimens from the Herbarium are also used for classroom demonstrations and laboratories. Researchers from the Wisconsin Department of Natural Resources, other University of Wisconsin campuses, and universities in other states have frequently made use of the Herbarium collection.

### ***Institute for Land and Water Studies***

The Institute brings together a group of faculty who have interdisciplinary interests in solving environmental problems. Faculty and students participate in researching diverse aspects of ecosystems preservation and restoration, ground water and surface water resources, waste management and resource recovery, and applications of geographical information systems. Projects have been funded by the U.S. Environmental Protection Agency, the Wisconsin Department of Natural Resources, and local government agencies and industries. The Institute offers opportunities for graduate assistantships.

### ***Institute for Research***

The Institute for Research assists faculty members in obtaining support for research. Graduate students working with faculty can learn to develop proposals for funding from federal agencies, private foundations, and industry. The Institute has access to the latest information on funding sources through the Sponsored Program Information Network of New York as well as the Grants Information Office of the University of Wisconsin System.

### ***Laboratories***

The University has devoted a significant portion of its resources to developing laboratory facilities to support the natural and social sciences. A number of these labs are devoted mostly to research and include a water analysis laboratory, a waste management resource recovery lab, and a computer-based cartography lab. Available equipment includes gas and liquid chromatographs, spectrophotometers (UV, IR, visible), microscopes, autoanalyzers, atomic absorption spectrometer, liquid scintillation apparatus, growth chambers, and other equipment. Microcomputers are available in the lab sciences building. A commercial high-pressure briquetting machine is available in the waste management lab for the study of processing coal or other fines. Other spaces

available for research use include a herbarium and greenhouse. The University also has boats, a four-wheel drive vehicle and a variety of other equipment for field studies.

### ***Library***

Centrally located among the academic buildings, the Library supports the academic program with a collection of over one million items and computer database access to the accumulated knowledge of humankind.

The Library holds nearly 280,000 books and bound periodicals, maintains current subscriptions to 1,400 scholarly journals, magazines, and newspapers, and has 26,000 rolls of microfilm backfiles. Extensive holdings of government documents include those acquired as a depository for the U.S. Government and the State of Wisconsin, and also collections of publications of Canada, the United Nations, and many international organizations. About half of the 900,000 government documents are on microfiche. Other specialized collections include 55,000 maps, 3,300 sound recordings, 2,000 musical scores, and 5,800 instructional materials for teachers. In addition, the Special Collections Department contains historical records of northeast Wisconsin, the Kramer Collection of socialist/radical literature, fine print books, rare materials including old maps and manuscripts, and the University archives.

Library facilities include a quiet study area, individual and group study rooms, a micro-computer area for individual word processing use, and general reading and study areas. The Library's "card catalog" is accessed by on-line computer stations.

Information available to library users goes far beyond its own holdings. Library patrons can gain access through the OCLC database to 23 million books and other materials held by 8,000 libraries in the U.S., Canada, and England. Users also can access the DIALOG system which provides entry to 300 databases in a broad scope of disciplines containing over 160 million records. Several compact disk databases are available in the library.

### **Richter Natural History Museum**

The Richter Natural History Museum is a valuable resource for student study and research. Its collections include representative animal species from northeastern Wisconsin and an extensive collection of bird eggs, nests, and study skins derived mainly from the life's work of the late Carl H. Richter of Oconto, Wisconsin. Richter, one of North America's foremost oologists, in 1975 donated all of his specimens, including more than 10,500 egg sets. Some are dated as early as 1884. The donation included a large series of vertebrate specimens, Indian artifacts, mollusks and butterflies, geological specimens, historical documents, and photographs.

Today, the Richter Museum includes approximately 11,000 sets of bird eggs representing more than 90 percent of the North American avian species and subspecies. Valuable sets include endangered species such as whooping crane, snail kite, and Kirtland's warbler, and several extinct species, including the passenger pigeon. The egg collection is North America's 13th largest. In addition to fluid-preserved specimens, study skins, and skeletons, the Museum has a library of books, journals, and reprints in support of the collections:

The Museum collection includes nearly 100 percent of the locally breeding bird species, 95 percent of the mammals, 80 percent of the reptiles and amphibians, and 80 percent of the fishes. Specimen collections continue to grow through contributions by students, faculty, and staff, and by the Wisconsin Department of Natural Resources, U.S. Fish and Wildlife Service, and U.S. Forest Service.

Materials from the natural history collections and from the University's Herbarium are displayed in the museum in Laboratory Sciences room 201.

### **Sea Grant Program**

UWGB faculty members participate in the University of Wisconsin Sea Grant College Program. The Green Bay program involves public education and research projects dealing with water quality, fisheries, coastal marshes, and human impact on the bay of Green Bay and the Great Lakes. Several University boats are available for research.

### **School Services Bureau**

The School Services Bureau helps to meet specific educational needs in the larger community with the assistance of faculty and staff at the University of Wisconsin-Green Bay and in local school districts. It identifies resource persons and programs for classroom and other in-school activities; develops and conducts in-service programs; serves as a liaison to UWGB departments responsible for credit courses, non-credit conferences, workshops and seminars, and other educational activities; participates in cooperative study and research activities; and arranges for consultant services.

### **Wiley Collection**

The development of pollution control efforts by the Wisconsin pulpmaking industry is documented in more than 5,000 research reports, articles and conference proceedings. The collection and accompanying bibliography is housed on the UW-Green Bay campus. It was the gift of Averill Wiley of Appleton, retired technical director of the former Pulp Manufacturers Research League, which merged in 1970 with the Institute of Paper Chemistry. The collection, begun in 1940, focuses on spent liquors of the acid sulphite pulping industry and includes more recent developments in wood chemicals and pulping by-products.

# ■ General Information

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## Credits Required

A minimum of 30-36 credits, depending upon the chosen program, is required for completion of the UW-Green Bay master of science degree.

## Grades

All courses and assigned studies are graded on a 4.0 scale. A cumulative grade point average of at least 3.0 is required to earn the M.S. Thesis credits or internship credits are given an in-progress (PR) grade each semester until the thesis or internship is formally accepted as completed at which time the grade will be changed to pass (P) or no credit (NC). A pass (P) grade must be achieved in order to graduate.

Students are expected to maintain a cumulative grade point average of at least 3.0. Students who fail to maintain this average are subject to probation and/or suspension as specified in the Graduate Academic Rules and Regulations.

## Time Limit

Matriculated graduate students must complete all requirements for the M.S. degree within five years. This time period begins with the first day of the first term of enrollment with a classification of MS5. Classification and year designations are described on page 12.

## Course Requirements

The student and his or her graduate committee must develop an individual program plan to satisfy requirements of the student's specific program—Administrative Science or Environmental Science and Policy. An acceptable program plan must include:

1. Graduate core courses  
(12 or more credits)
2. Specialization courses  
(credits to bring total to 24-30)
3. Thesis  
(6 credits)

Each is explained in more detail.

## Graduate Core Courses

(12 or more credits)

Graduate core courses are the courses numbered at the 700 level (700 through 794, excluding 783). These courses are open only to graduate students.

## Specialization Courses

(credits as needed to bring total to 24-30)

A typical program plan may also include several different types of specialized courses to gain particular knowledge, skills, and experiences. These may include dual-listed undergraduate/graduate courses, selected upper-level undergraduate courses, independent studies, transfer credits, and internships.

## Undergraduate/Graduate Courses

(numbered XXX-500 to XXX-595 and XXX-600 to XXX-695): Graduate students may register for specific undergraduate courses designated as undergraduate/graduate (UG/G) without submitting an assigned study card. These courses are identified by course numbers at the 500 and 600 levels.

Other undergraduate courses at the 300 and 400 levels may be taken for graduate credit if they contribute to a coherent program of study. An assigned study card must be submitted with registration as XXX-596 or XXX-696 as appropriate.

Academic standards for graduate credit in graduate/undergraduate courses exceed standards for undergraduate credit. Increased standards may be in the form of additional academic work and/or an increase in grading standards.

**Experimental Courses** (numbered 002, 006, or 008-783X): From time to time, graduate faculty may offer courses in response to special demand, to address current issues, or to make use of special resources offered by visiting faculty. These are offered once on an experimental basis; they may later become regular course offerings. Courses offered with the 783X number may not be counted as part of the graduate core requirement.

**Independent Study** (numbered 002, 006, or 008-798): Independent study may be undertaken in the form of reading and research

completed under the supervision of a member of the graduate faculty. This type of study can be undertaken only after an approved program plan is filed including the independent study course as an integral part of the individual program. Under normal circumstances, a maximum of six credits of independent study may be applied toward the degree; however, with strong recommendation and a rationale provided by the major professor, additional independent study credits may be allowed. To arrange for independent study courses, students must prepare a proposal that includes a statement of objectives, a list of readings and/or projects to be completed, and a statement of how the work will be evaluated and graded. The proposal is filed in the Graduate Studies Office and will be included in the student's file.

**Internship** (numbered 002, 006, or 008-797): An internship, usually undertaken outside of the University setting, must be an experience that provides a genuine training ground for the application of knowledge and understanding relevant to the student's area of study.

Internships must be preplanned and incorporate predetermined criteria for grading. A full description of internship activities, including methods of academic evaluation, must be submitted to the student's major professor and the associate dean of graduate studies. It will be included in the student's file. The internship must be sponsored by a member of the graduate faculty, although day-to-day administration of the experience may be by a non-faculty supervisor. An internship may be required by some graduate tracks. Experience gained in permanent employment cannot normally be counted as an internship. The amount of credit acquired through an internship is determined by the student's graduate committee, subject to approval by the associate dean of graduate studies. Normal maximum is six credits. The graduate program does not award credit for prior experience. However valid, an internship undertaken prior to enrollment in the program cannot carry credit toward the M.S. degree.

**Special Topics** (numbered 002, 006, or 008-795): From time to time, professors or groups of professors may organize courses,

seminars, colloquia, field trips, and so on, around some topic of interest or special need. Such courses are not normally intended to become part of the regular curriculum. Courses offered with the 795 number can not be counted as part of the graduate core requirement.

**Credit From Other Institutions:** The specialized study component may also include a maximum of 12 graduate credits earned at other institutions prior to admission to UWGB. Transfer credit evaluation is the responsibility of the student's graduate faculty committee at the time the student's program plan is approved. These credits are subject to the review of the associate dean of graduate studies and the registrar.

Any additional courses to be taken at other institutions and to be included as credits toward the degree must receive prior approval from the student's major professor and the associate dean of graduate studies.

### **Thesis**

(6 credits registered as 002, 008-799)

Students must register for a minimum of one credit of thesis during the semester in which the thesis defense is to occur. A student may earn more than six credits for thesis, but only six credits may be applied toward degree requirements.

## **Progress Toward the Degree**

Following is a guide to the steps required to earn the M.S. degree in Administrative Science or Environmental Science and Policy, from admission to completion of the program.

### **Steps Toward the M.S. Degree**

1. Applicant is admitted to the graduate program.
2. No later than the semester in which student completes at least six credits, he or she selects major professor and, if possible, graduate committee members. Student submits individual program plan (form GR-1) to Graduate Studies Office.

3. After at least 15 credits, student develops thesis proposal. Proposal is reviewed and approved by the committee and submitted, along with form GR-2, to Graduate Studies Office for approval by associate dean.

4. Student may register for thesis credits and continue work on thesis project.

5. Student files an intent to graduate with the Registrar's Office.

6. Student schedules thesis defense by filing form GR-3 when the project and thesis document are nearly complete.

7. Open thesis defense meeting. Satisfactory completion of thesis and defense is indicated by filing form GR-4 with the Graduate Studies Office.

8. Final format of thesis is checked by associate dean.

9. Student submits to Graduate Studies Office the required number of thesis copies for final approval and deposition in University library.

10. Graduate receives diploma.

The narrative following explains the process in detail.

### **Graduate Committee**

It is important to select a major professor and committee early. The coordinator or adviser for the student's chosen program normally assists in this process. A student's individual committee is comprised of at least three graduate faculty members approved by the appropriate program coordinator. One committee member is requested by the student to act as the major professor. Students may ask a person from outside the University to join their committees, in addition to the faculty members.

The committee is responsible for supervising the student's program of study and should:

- guide the student in appropriate selection of graduate courses and specialization studies to ensure that the student is aware of all relevant materials necessary to completely understand the chosen field of study;
- determine whether the student has accumulated and demonstrated sufficient ability to engage in analytic processes of problem solving;

- make certain that the student's thesis project is consistent with the degree, confronts the interdisciplinary relationships of the subject area, and focuses on problem solving methods.

If, during the student's course of study, he or she wishes to change committee members, the student must explain to the committee why the change is necessary or desirable. *If the change is acceptable to both outgoing and incoming professors, the student must notify the Graduate Studies Office in writing.*

### **Student Program Plan**

The primary responsibility for ensuring that each student's program plan meets the requirements and regulations of the M.S. program rests with the student's graduate committee. The student develops the program plan with his or her committee. If the student has not selected a complete committee, the major professor can approve and sign the program plan. In the absence of both committee and major professor, the graduate program coordinator can approve the program plan as the student's adviser. All program plans are subject to final approval by the graduate program coordinator and the associate dean of graduate studies. They may suggest changes to ensure that the plan conforms to the overall philosophy and requirements of the M.S. program. The Graduate Studies Office will contact the major professor and student if changes are necessary. A program plan must be submitted to the Graduate Studies Office in the semester in which the student completes six credits of graduate-level course work. It must be approved before a student can register for additional courses. Subsequent changes may be made, but these are subject to further review by the associate dean of graduate studies. *All changes must be submitted to the Graduate Studies Office so that the student's file remains current.*

Documents substantiating certain course work should accompany the program plan to the associate dean of graduate studies, if appropriate. These may include:

- Documents of transfer credits accepted by the student's committee.
- Petition for changes in graduate program requirements.

In preparing the program plan, the student should use the *Guidelines for Completing the Graduate Program Plan*, which will be mailed with the admission letter.

### **Thesis**

The thesis project and the formal paper which documents it are distinctive to the UWGB graduate program. All students complete a thesis project, working with their major professor and committee. The project provides an opportunity for graduate students to focus and apply their course work and make a public contribution to knowledge. Successful completion of a thesis is a clear indication of a student's ability to define, investigate, and solve problems.

**Thesis Proposal.** The thesis proposal is a formal document which provides an overview of the planned thesis project. It must include an explanation of the research problem, issue, or situation to be addressed, its relevance or application, the methods and resources that will be used in completing the thesis, and a list of references cited.

In preparing the proposal, the student should use *Guidelines for Preparing the Thesis Proposal*. A copy of thesis guidelines and a copy of form GR-2 will be mailed to students along with notice of their program plan approval.

After a student has completed 15 credits of coursework he or she prepares a thesis proposal. It must be approved by the major professor and committee at a formal meeting. If they approve the proposal, the major professor and committee members sign form GR-2 and forward it, with a copy of the thesis proposal to the associate dean of graduate studies for final approval.

Also at this time, or no later than completion of 21 credits, the student files a request to graduate form with the Registrar's Office listing the earliest possible graduation date.

**Thesis Registration.** Only students with a MS7 classification may register for thesis writing credits (799). This classification is assigned to matriculated graduate students following acceptance of an approved graduate program plan and thesis proposal. Enrollment for thesis credits (799) may be for one to six credits per term and may be spread over several terms as

appropriate. A student must be registered for a minimum of one thesis credit during the term in which the thesis defense is scheduled.

**Thesis Preparation.** The thesis is a formal document and must be prepared to conform to UWGB library requirements and graduate program standards. In preparing the thesis, students should use *Style and Format Requirements for the Master's Thesis*. A copy of thesis guidelines and copies of forms GR-3 and GR-4 will be mailed to students along with notice of thesis proposal approval. *It is the student's responsibility to prepare and present the thesis in an acceptable format.* Several writers' guides and style manuals are commercially available.

**Thesis Defense.** The thesis defense is an open event attended by the candidate's graduate committee, and anyone else who wishes to attend. The defense permits the committee to ascertain whether the student has adequately understood and seriously attempted to solve the thesis problem.

The student must file form GR-3 to schedule the thesis defense. The form must be filed with the Graduate Studies Office at least one week in advance of the proposed date. The thesis defense should be scheduled during one of the academic terms unless other specific arrangements are acceptable to all parties.

Before attending the thesis defense, the candidate should provide form GR-4 to the major professor. After a satisfactory defense, the major professor and committee members sign the form and return it to the Graduate Studies Office. A dissenting signature must be accompanied by an explanation from the dissenting member. The associate dean of graduate studies may withhold approval of the thesis defense pending resolution of any differences. A candidate is considered to have passed his or her thesis defense only after all issues have been resolved and the completed GR-4 is returned to the Graduate Studies Office.

**Thesis Deposition.** Upon satisfactory conclusion of the thesis defense and an acceptable graduate summary from the Registrar's Office, the candidate is required to supply two copies of the thesis, including two copies of any audio/visual components and one additional copy of the title page and abstract, to the

Graduate Studies Office. After the major professor signs the thesis, the associate dean for graduate studies reviews and signs it or returns the document for revision. Two copies of the final document are forwarded with a binding fee (\$7 per copy at the time of printing, but subject to change), collected from the student, to the UWGB library as a permanent record of the student's scholarly or creative activity. If the candidate wishes, additional copies may be bound at the same per copy fee, payable to UWGB. Diplomas are not awarded until all these requirements have been met.

## **Commencement**

UWGB holds two commencement ceremonies each year. These are at the end of the fall and spring semesters. For graduation in the fall, a student's defense must be scheduled before December 1 and held before the last day of fall semester classes. For spring, the defense must be scheduled before May 1 and held before the last day of spring semester classes. A request to graduate form must be completed and submitted to the registrar prior to November 1 and April 1 respectively. Students who will complete their work during the summer may participate in the preceding spring ceremony.

## **Degrees**

The degree awarded will be M.S. in Environmental Science and Policy or M.S. in Administrative Science. Students who complete the cooperative programs (with UW-Milwaukee and UW-Oshkosh) will receive their degrees from one of those institutions.



# ■ Admission

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## Admission Requirements

Admission to a UWGB graduate degree program is a decision by the associate dean of graduate studies and the faculty for the specific program identified by the student on the application form. The decision is a judgment of the student's suitability to succeed in graduate degree work at UWGB, based on educational background and educational objectives.

While UWGB has a basic admission policy for graduate study, a philosophy of personalized admission assures that each applicant is considered individually. Entry requirements for full admission include:

1. A baccalaureate degree from an accredited institution.
2. A 3.0 grade point average, measured on a 4.0 scale, for the final two years of study. Students from schools not using a grading system will be evaluated on an individual basis.
3. Additional prerequisites for entrance to the specific program chosen.

Students who do not meet the 3.0 GPA requirement or who have other deficiencies may be admitted on a provisional basis. Provisionally admitted students who receive at least a B grade in courses totaling nine credits of graduate work after acceptance will be fully admitted.

International students must be prepared to submit a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). International student applicants must show official evidence of financial resources adequate to provide for their educational expenses.

## Application

Application forms are available on campus at the Graduate Studies Office. Forms will be mailed in response to telephone requests to (414) 465-2484. Written requests may be directed to: Graduate Studies Office, University of Wisconsin-Green Bay, 2420 Nicolet Dr., Green Bay, Wisconsin 54311-7001.

Required documents are:

1. The application, completed in full.
2. A 200-300 word statement describing principal areas of academic interest, capabilities, experience, and reasons for pursuing the M.S. degree.
3. Official undergraduate and graduate transcripts from each previous college or university attended, sent directly to UWGB from these institutions.
4. Three letters of recommendation from persons who can assess the prospective student's academic potential.
5. Graduate Record Examination (GRE) general test or Graduate Management Admissions Test (GMAT) scores less than five years old. Consult the appropriate program description in this catalog. Scores will be used in conjunction with the required materials to better assess preparation.

Under requirements of the Buckley Amendment to the Family Educational Rights and Privacy Act of 1974, student files are open to their inspection except for letters of recommendation for which the right of inspection has been waived.

Other supporting documentation such as personal records of professional or community achievement may also be submitted.

## Deadlines

Application, transcripts, and letters of recommendation required for entry into the M.S. degree program should be submitted as early as possible in the semester preceding the desired beginning semester. Because of campus enrollment caps and possible program capacity limitations, priority is given to completed applications received before April 1 for the fall semester and November 1 for the spring semester. Complete applications received by August 1 for the fall semester and by January 1 for the spring semester will be processed as time and space permit. A complete application includes the forms and all supporting documentation listed above. Students not meeting these deadlines may be able to take courses as graduate special students and apply to the degree program for the following semester.

## Fee

A non-refundable twenty dollar (\$20) application fee is required of all students who apply for admission to the graduate program of the University of Wisconsin-Green Bay or any other graduate school within the University of Wisconsin System. The \$20 fee does not apply to students who wish to be admitted as special students (i.e., non-degree students).

UW-Green Bay maintains records for two years for students who are admitted to the program but who do not enroll for classes. The application fee is valid for one year from the start of the initial semester on the application. Students who begin enrollment after a year elapses must pay another \$20 fee and bring their applications up-to-date. Students who delay enrollment beyond two years must reapply for admission and pay another \$20 application fee.

## Admission Process

The admission process is initiated by submitting the completed application form to the Admissions Office. The Office notifies applicants whose files are incomplete. When the file is complete, transcripts of previous undergraduate work and any graduate courses are examined by the Registrar's Office. Factors affecting either admission to the graduate program or acceptance of transfer credits are noted.

The file is forwarded to the Graduate Studies Office where the associate dean of graduate studies, on the advice of the Admissions Committee for the program specified on the admissions form, either admits the applicant to the graduate program and area of emphasis, or provisionally admits the applicant, or denies admission.

If an applicant is denied admission, reasons for the denial are provided along with an explanation of available options. Students denied admission may request reconsideration by writing to the associate dean of graduate studies. The request should include a rationale for reconsideration. Applicants who have been denied admission may reapply after the lapse of one semester.

## Letter of Admission

A letter of acceptance is sent to each student upon admission to the graduate program. This information appears on the letter:

### **Student Number**

The permanent student number of each applicant is the social security number or, if this is not provided, a University-assigned identification number.

### **Classification and Year**

Each student's status is designated by one of these abbreviations:

**MSE5, MSA5** First semester M.S. student without approved program plan.

**MSE6, MSA6** M.S. student with approved program plan. A degree seeking student may not register for classes after six completed credits without an approved program plan.

**MSE7, MSA7** M.S. student with approved program plan and approved thesis proposal. A student may not register for thesis credits without the MS7 classification.

**GSP** Graduate special student. This classification indicates that course work is being taken for graduate credit; however, the student is not participating in the UWGB degree program. A graduate special student who decides to pursue a UWGB graduate degree must submit an application form to enter the degree program. Often the credits earned as a graduate special student may be applied toward the M.S. degree; however, this is not guaranteed.

## Admission With Advanced Standing

All graduate course work completed at UWGB or at other graduate schools prior to admission to the M.S. degree program is evaluated by the student's graduate faculty committee when a student's program plan is prepared. The total number of credits earned prior to matriculation into the degree program either at other institutions or as a graduate special student (GSP classification) at UWGB cannot exceed 15 credits. Of the 15, a maximum of 12 credits may be accepted from other institutions.

## Special Students

Persons holding baccalaureate degrees or higher who wish to enroll in courses at UWGB but who do not wish to pursue a graduate degree may enroll as special students. Graduate credit will be awarded provided that the student registers in graduate level courses as a graduate special student (GSP classification) and pays graduate fees. Credits for which neither graduate fees were paid nor graduate credit awarded cannot be retroactively converted to graduate credits.

## Transfer Credit Policy

Transfer credit is defined as credit earned at an institution other than UWGB which is to be applied to UWGB master's degree requirements. Acceptance of transfer credits is determined by a credit review by the Registrar's Office, and development of a program plan which includes the credits as part of a coherent program of study. Acceptance of the transfer credits is subject to review and approval by the associate dean of graduate studies. General guidelines for evaluating potential transfer credits are:

- A maximum of 12 semester credits of graduate work may be accepted as transfer credits.
- A letter grade of A or B must be earned in each course transferred.
- The courses must contribute to a coherent program of study.
- The institution granting the credit must be regionally accredited at the master's degree level.
- The credits must be reasonably recent, usually earned within the five years prior to admission.
- Credits earned through extension courses offered or sponsored by universities outside of the state of Wisconsin will be subject to particular scrutiny.
- Credits earned under conditions that make them unacceptable toward a degree at the institution where the credits were earned will not be accepted by UWGB.

## Use of Special Petition

Requirements sometimes may be modified or adapted to take into account a student's special educational or program needs. A request to waive or modify a graduate program academic requirement is submitted to the associate dean for graduate studies on a special petition form. The forms are available at the Academic Advising Office or the Graduate Studies Office. If a change in a program requirement is being requested, the petition should include a statement from the major professor or graduate committee and the graduate program coordinator explaining the change.

## Active/Inactive Status

Matriculated students who do not enroll for four or more consecutive semesters without notifying the Graduate Studies Office by filing a request to leave, are considered inactive. They must be formally readmitted before they can re-enroll in classes. Inactive students who must reapply must meet admission standards in effect at the time of readmission and are expected to meet degree requirements in effect at that time as well. The \$20 application fee does not apply to students seeking readmission after a period of inactivity.

## Tuition and Fees

### Costs

Tuition and fees for full-time graduate study (9 credits or more) for the 1992-93 academic year were \$1,237 per semester for residents of Wisconsin and \$3,701 per semester for non-residents. Part-time students were assessed a fee of \$138.50 per credit for residents of Wisconsin and \$412.25 for non-residents. Fees and tuition are subject to change by action of the University of Wisconsin Board of Regents and the Wisconsin Legislature. The actual costs for each academic year are announced in advance in the *Timetable* or on separate fee information sheets, and are available on request from the Registrar's office.

### **Reciprocity**

Minnesota and Wisconsin have a reciprocity agreement. Minnesota students may pay in-state Minnesota tuition and fees to attend public universities in Wisconsin. Students must apply directly to the Minnesota Higher Education Coordinating Commission, Suite 901, Capitol Square, 550 Cedar Street, St. Paul, MN 55101.

### **Non-Resident Tuition Waivers**

A limited number of non-resident tuition waivers are available on a competitive basis to recipients of graduate assistantships. International students may also apply for waiver of non-resident fees by contacting the International Student Center (414) 465-2413. Recipients of waivers are responsible for resident fees.

### **Other Financial Aid**

In addition to graduate assistantships, several other grant or aid programs are available. These include Perkins Loans, Stafford Loans, or University work/study awards. Students defined as minority group members may apply for Advanced Opportunity Grants or Wisconsin Indian Student Assistance Grants. For more information, contact the Financial Aid Office, (414) 465-2075.

### **Graduate Assistantships**

Graduate assistantships are available on a competitive basis. Graduate assistantships carried a stipend of \$6,750 in 1992-93. Students receiving assistantships are expected to devote approximately 20 hours per week performing assigned duties. Typical duties are serving as a teaching assistant in a laboratory or discussion section; tutoring students in the Educational Support Program; assisting in a center or institute; or serving as a research assistant.

To be eligible for graduate assistantships students must:

- be fully admitted to the M.S. degree program;
- be enrolled for a minimum of six credits of course work each semester and no fewer than 15 credits during the entire academic year;
- maintain at least a 3.0 grade point average for graduate courses.

Applications for graduate assistantships should be filed as early as possible but no later than March 1 for the following September. Applications received after this date or at other times of the year will be considered for unfilled assistantships or possible assistantships funded from grant monies. Persons who wish information on availability of assistantships should inquire at the Graduate Studies Office.

# ■ Administrative Science

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UW-Green Bay's Administrative Science program prepares skilled and imaginative individuals for management and policy-making positions in business, nonprofit organizations, and government. The program offers areas of emphasis in public and private management, policy analysis and planning, and decision science and systems analysis.

Administrative Science centers on developing skills and understanding to manage formal organizations effectively. Students develop a thorough understanding of organizations and of how to design, manage, and change them to optimize their effectiveness. As part of the program, students develop an understanding of decision and policy making processes and methods so they are better able to improve both *organizational processes and decisions*. The degree, Master of Science in Administrative Science, is a clear alternative to either an MBA or MPA. The degree is aimed primarily at those who plan careers in management or high-level staff positions in public, private, and not-for-profit organizations. It has provided an exceptional academic background for students who have gone on to complete doctoral programs in business, public management, policy analysis, and related fields.

The Administrative Science program will meet the needs of:

- professional employees of business and industry, government agencies, or nonprofit organizations who want to develop *exceptional skills and understanding in management, planning and policy analysis, or decision science and systems analysis* for career advancement and professional development;
- recent graduates in the social or natural sciences, engineering, liberal arts, or other fields who desire administrative, managerial, planning, and policy analysis positions at a professional level;
- persons who intend to pursue doctoral studies in business or public administration or policy analysis and who wish additional preparation beyond the baccalaureate level before beginning doctoral work.

The program fits the needs of both part-time and full-time students. Many graduate students work full time, live within commuting distance of the campus, and prefer to pursue their graduate studies on a part-time basis. Most courses are offered once weekly in the evening. Some are offered in an intensive semester format or for several Saturdays during the semester. Full-time students benefit from involvement with a community of students and close working relationships with faculty. Fully prepared full-time students find that it typically takes two years to complete the program. Part-time students can complete the program within five years or fewer, depending on the pace at which they take course work.

## Areas of Emphasis

**Management.** This emphasis is for students seeking management careers in private, nonprofit, or public organizations. Students complete a set of courses that provides them with contemporary skills in problem solving and decision making, management and leadership, research and analysis methods, and a thorough understanding of organizational processes and environments.

Beyond the required core courses, each management student works with a faculty adviser to define additional courses and independent studies in an area of particular interest. Emphases of recent graduates include health care administration, total quality management, environmental administration, human resources, organizational planning, and public management. Some students choose to develop programs that provide a strong general emphasis in business, not-for-profit, or public management.

**Policy Analysis and Planning.** This emphasis is for students who wish to focus on advanced methods of problem solving, policy analysis, decision making, and planning, or on substantive policy issues, such as those associated with contemporary public problems or the public policy system itself.

Students take courses which provide an understanding of organizations and organizational processes, public policy processes, planning and decision making, and research and analysis methods. Students design, with the help of a faculty adviser, courses of study beyond the core courses to develop special competence in specific topics or methods. Many students focus on environmental issues, governmental regulation, or natural hazards and risk. The University's faculty has special competence in those areas and there are unique opportunities for study in those areas at UW-Green Bay.

### **Decision Science and Systems**

**Analysis.** This emphasis is for students who wish to engage in sophisticated, professional systems planning and analysis, making use of the perspectives and quantitative tools of management and policy science.

The program provides students with the opportunity to develop skills in statistical analysis, building mathematical models, management information and decision sciences, systems design, and planning and analysis. Technical systems exist only in an organizational context, so decision science and systems analysis students also develop an understanding of behavioral systems, organizational analysis, and organizational change processes.

### **Prerequisites**

Students who are prepared adequately when they enter the program may earn the degree by satisfactorily completing 30 credits of course work and independent study and a six-credit thesis. Students who lack appropriate prerequisites or technical knowledge will have additional requirements.

A faculty committee evaluates each student's prior academic and work experience when he or she enters the program. All students must have a baccalaureate degree or equivalent and are expected to have knowledge equivalent to that obtained in undergraduate courses appropriate to their selected emphasis and to have superior written and oral communication skills. They should be able to operate a personal computer.

Each of the three areas of emphasis requires somewhat different skills and background, so prerequisites vary among the emphases. For example, students emphasizing management should have some background in finance and accounting. Students emphasizing policy analysis and planning are expected to have considerable knowledge of American government and political processes. Those who plan to emphasize decision science and systems analysis should have more background in mathematics and statistics than students in the other emphases. Before or upon admission, the student will work with an adviser to learn whether deficiencies exist and how to remedy them. All deficiencies must be remedied early in the student's graduate program.

Students who show exceptional promise, but who lack appropriate background in some areas, may be admitted provisionally. They may need to take relevant undergraduate courses or demonstrate competency in those areas to the appropriate faculty. Undergraduate courses taken to gain such skills do not count as part of the master's degree program.

Current GMAT or GRE scores are required of all applicants.

### **Degree Requirements**

Students must complete at least 30 credits of approved course work and independent study and a six-credit thesis project. Students must maintain at least a B average to remain in the program and to be graduated. A grade of C or better is required for a course to be counted toward graduation.

The Administrative Science emphases share a common core of courses that should be completed before the student engages in significant additional study. The core consists of five courses, four of which are mandatory for all students. A fifth core course is chosen from among available methodology courses. Each student also selects an emphasis consisting of at least 15 credits.

Students develop the thesis project in concert with their faculty adviser. For students already employed professionally, the thesis is often related to some significant aspect of their employment. Others often focus their thesis

project on some aspect of the field in which they expect to work. Theses in Administrative Science have a real world focus and represent the culmination of the student's academic career at the University of Wisconsin-Green Bay.

Program requirements change and, from time to time, new graduate courses are added and others are dropped. This catalog describes the program requirements at the time of publication. Consult an adviser for any changes since publication.

### ■ Core Courses

All Administrative Science students take the following three courses focused on organizational processes and management:

- 002-750 Organizational Decision Making, 3 cr.
- 002-753 Administrative Theory and Behavior, 3 cr.
- 002-757 Management of Complex Organizations, 3 cr.
- 002-760 Social Research Methods, 3 cr.

One of the following analytical methods courses:

- 002-741 Survey and Field Research Methods, 3 cr.
- 002-765 Program Evaluation, 3 cr.
- 008-767 Design of Experiments, 4 cr.
- 008-768 Multivariate Statistical Analysis, 4 cr.
- 298-607 Introduction to Econometrics, 3 cr.

Courses taken to meet a core requirement may not be used to meet emphasis requirements.

### ■ Areas of Emphasis

#### Management

Students choosing this emphasis are required to take at least two courses in Group A. The remainder may be from Group A or Group B:

#### Group A

- 002-708 Public Policy Analysis, 3 cr.
- 002-755 Organizational Analysis, 3 cr.
- 002-770 Organizational Change and Development, 3 cr.
- 002-775 Total Quality Management, 3 cr.
- 002-776 Communicating Quality, 3 cr.
- 002-781 Statistical Process Control, 2 cr.

#### Group B

- 216-624 Marketing Research, 3 cr.
- 216-649 Cases in Finance, 3 cr.
- 216-662 Seminar in Human Resources Management, 3 cr.
- 216-688 Rational Decision Making, 3 cr.
- 835-606 State and Local Government, 3 cr.
- 835-615 Public and Nonprofit Budgeting, 3 cr.
- 835-651 Decision Theory and Methods, 3 cr.
- 835-652 Planning Theory and Methods, 3 cr.

#### Policy Analysis and Planning

Choose five of the following courses:

- 002-708 Public Policy Analysis, 3 cr.
- 002-713 Energy, Natural Resources and Public Policy, 3 Cr.
- 002-752 Environmental Policy and Administration, 3 cr.
- 002-765 Program Evaluation, 3 cr.
- 216-688 Rational Decision Making, 3 cr.
- 362-660 Resource Management Strategy, 3 cr.
- 835-506 Regulatory Policy and Administration, 3 cr.
- 835-651 Decision Theory and Methods, 3 cr.
- 835-652 Planning Theory and Methods, 3 cr.

#### Decision Science and Systems Analysis Group A

Choose three:

- 002-781 Statistical Process Control, 2 cr.
- 008-704 Discrete Multivariate Statistical Analysis, 2 cr.
- 008-764 Operations Research and Management Science, 3 cr.
- 008-767 Design of Experiments, 4 cr.
- 008-768 Multivariate Statistical Analysis, 4 cr.
- 216-651 Design of Computer-Assisted Systems, 3 cr.
- 216-688 Rational Decision Making, 3 cr.
- 600-555 Applied Mathematical Optimization, 3 cr.

#### Group B

Choose two:

- 002-755 Organizational Analysis, 3 cr.
- 002-765 Program Evaluation, 3 cr.
- 002-770 Organizational Change and Development, 3 cr.

#### ■ Thesis

- 002-799 Thesis, 1-6 cr.

## Faculty

**Alesch, Daniel J.**, Professor, Public and Environmental Affairs (Management). B.S. (1962), M.S. (1964) UW-Madison; M.A. (1969), Ph.D. (1970) University of California-Los Angeles.

Policy analysis, decision theory, planning and budgeting, risk assessment and natural and technological hazards, program evaluation, and management. Substantive interests in organizational change, housing and social welfare policy, and waste water and water quality.

**Furlong, Scott R.**, Assistant Professor, Public and Environmental Affairs (Political Science). B.A. (1985) St. Lawrence University; M.P.A. (1987), Ph.D. (1993) The American University.

Regulatory policy, environmental policy, legislative politics, administrative law, public policy and administration, research methods, and interest group influence on the administrative rule making process.

**Harris, John H.**, Associate Professor, Business Administration (Management). B.B.A. (1969) UW-Madison; M.B.A. (1973) American; Ph.D. (1981) Kentucky.

Management, organizational behavior, organizational theory, stress.

**Jowett, David**, Professor, Natural and Applied Sciences (Statistics). B.Sc. (1956) University College of North Wales; Ph.D. (1959) Wales.

Statistics, statistical computing. Design of experiments, multivariable analysis, systems analysis, process control and quality control.

**Kraft, Michael E.**, Herbert Fisk Johnson Professor, Public and Environmental Affairs (Political Science). A.B. (1966) University of California-Riverside; M.A. (1967), Ph.D. (1973) Yale.

American politics and government, public policy analysis, congressional behavior and legislative processes, environmental policy, the political context of policy implementation, politics of nuclear waste disposal.

**Obenberger, Robert W.**, Associate Professor, Business Administration (Marketing). B.S. (1964) UW-Whitewater; M.S. (1966) Northern

Illinois; Ph.D. (1974) Louisiana State University.

Marketing strategy, marketing for nonprofit organizations, macromarketing.

**Scheberle, Denise L.**, Assistant Professor, Public and Environmental Affairs (Political Science). B.S. (1982), M.P.A. (1984) University of Wyoming; Ph.D. (1991) Colorado State University.

State and local government, inter-governmental relations, public administration, public policy, environmental policy. Special interest in indoor air quality, radon control programs, and hazardous waste policy.

**Sridhar, Sandhya**, Assistant Professor, Business Administration (Management). B.A. (1969), M.A. (1971) University of Bombay; Ph.D. (1988) Ohio State University.

Organizational behavior, organizational theory, organizational change and development, research methods.

**Stoll, John**, Professor, Public and Environmental Affairs (Economics). B.S. (1973) UW-Green Bay; M.S. (1977), Ph.D. (1980) University of Kentucky.

Resource and recreation economics, agricultural economics, valuation of nonmarket goods, land economics.

**Troyer, Michael D.**, Associate Professor, Business Administration (Management). B.A. (1966) Cornell; M.A. (1971), Ph.D. (1975) Duke.

Strategic management, planning and control, problem solving and decision making, creative thinking, management of service and nonprofit organizations.

## Adjunct Faculty

**Holly, James N.**, Director, Small Business Development Center. B.S. (1960) U.S. Air Force Academy; B.S. (1971), M. Engr. (1977), M.B.A. (1981) Florida Atlantic University; Ph.D. (1983) University of Illinois at Urbana-Champaign.

Total quality management; organizational communication, business communication, conflict management.



**Johnson, Ernest M.**, Outreach Coordinator, Small Business Development Center. B.S. (1970), M.A. (1971) University of Illinois at Urbana-Champaign.

Human resource management; employee relations, including policy and procedures and union-management relations; total quality management; and leadership.

**Warner, Lora**, Lecturer, Public and Environmental Affairs, Consultant to health care organizations. Ph.D. (1987) Virginia Commonwealth University (Health Administrative Sciences).

Health care policy planning and evaluation, program evaluation, research methods, and leadership.

## Course Descriptions

In the course descriptions in this catalog, commonly used abbreviations include:

cr	credits
P	prerequisite course or experience
Rec	recommended course or experience
gr-st	graduate standing
fr	freshman
soph	sophomore
jr	junior
sr	senior
cons inst	consent of instructor

### Graduate-Only Courses (700-Level)

**002-708 Public Policy Analysis, 3 cr.**  
Public policy analysis methods and their use in the policy-making process, primarily in American government. Topics include approaches to the study of public policy, policy formulation, methods for assessment of policy alternatives, ethics and policy analysis, policy implementation and evaluation, and the utilization of policy analysis in decision-making. P: gr st.

**002-713 Energy, Natural Resources and Public Policy, 3 cr.**  
Public policy issues related to energy and other natural resources with a special emphasis on the United States. Topics include fossil energy, nuclear energy, solar and other alternative sources of energy; natural resources ranging from soil, water and minerals to wildlife, forests and parks. P: gr st. (*spring, even years*)

**002-741 Survey and Field Research Methods, 3 cr.**

Theoretical background and methodological skills necessary to use field methods and conduct survey research. Topics include: methods of field research, survey research and sampling design, and application of multivariate data analysis to survey data. Emphasis is on applied experience in the analysis of quantitative and qualitative data generated by different research methodologies. P: MS5; undergraduate statistics, 009-760.

**002-750 Organizational Decision Making, 3 cr.**

Examines normative and behavioral models of group decision making, the process and consequences associated with alternative decision making styles and systems, and develops skill in the use of the major decision-assisting tools. Case studies and examples from the fields of environmental management, public administration, and business or industrial management. P: gr st. (*spring*)

**002-752 Environmental Policy and Administration, 3 cr.**

The political and institutional aspects of environmental policy-making and implementation, including issues in environmental policy analysis. Emphasis is on national policy processes in the United States, but attention is given also to global and state and local environmental problems and public policy. P: gr st. (*spring*)

**002-753 Administrative Theory and Behavior, 3 cr.**

The major theories and schools of thought dealing with administrative behavior, administrative process, and organizational behavior and theory. Attention is given to the similarities and differences between public, private and nonprofit administration. P: gr st. (*fall*)

**002-755 Organizational Analysis, 3 cr.**

Analysis and design of the technical and administrative aspects of formal organizations within the context of sociotechnical systems, organizational development, and behavioral-cultural approaches. Organizations are examined as open systems consisting of interdependencies among persons, groups, technologies, and environmental variables. The emphasis is prescriptive and is intended to result in improved skills in evaluating, designing and intervening in organizations. P: MS5 and 835-652 or 002-753 or cons inst. (*fall*)

**002-757 Management of Complex Organizations, 3 cr.**

Advanced concepts and methods of managing complex organizations and multi-organizational systems in the public, nonprofit, and private sectors using a variety of learning methods. P: gr st. (*spring*)

**002-760 Social Research Methods, 3 cr.**

Theory and methods of research in the social sciences. Topics include the philosophy of science, research designs, data collection and program evaluation. Emphasis is on applied research. P: gr st. (*fall*)

**002-765 Program Evaluation, 3 cr.**

An introduction to evaluation research, emphasizing such issues as identifying program goals, choosing outcome measures, defining appropriate samples, data collection strategies, and evaluating and disseminating results. Political, administrative, and ethical problems of evaluation are considered. Much of the class is used to develop and discuss model evaluation studies. P: gr st.; graduate or undergraduate methodology course; Introductory Statistics. (*spring, even years*)

**002-770 Organizational Change and Development, 3 cr.**

Focuses on practical applications of being an organizational change agent. Emphases include facilitation, team building, process and expert consultation, sociotechnical systems theory, large scale systems change, and quality of work life. The focus is on manipulating organizational processes to achieve organizational effectiveness and satisfaction of individual needs. P: MS5 and cons inst. (*spring*)

**002-775 Total Quality Management, 3 cr.**

Theoretical and philosophical foundations of new management paradigms. The course develops practical skills for applying knowledge of continuous improvement processes. P: gr st.; Rec: 002-753, 002-757.

**002-781 Statistical Process Control, 2 cr.**

An intensive introduction to statistical analysis in industrial quality control. A review of basic probability and statistical principles is followed by: the significance of the statistical approach to quality; fish plots, Pareto plots, diagramming distributions, other exploratory techniques; control charts for measurements; control charts for attributes; CUSUM charts; critical review of acceptance sampling; design of experiments. P: gr st.

**002-783X Experimental Courses**

This number designates courses and seminars offered by graduate faculty in response to special demand or on an experimental basis. Topics may be chosen to address current issues of general concern, special interests of student groups or faculty members, or special resources of visiting faculty. The title of the special topics course as announced in the *Timetable* will appear on transcripts of the students who enroll. Credits earned in the 783X courses may not be applied toward the graduate core requirement. P: gr st. (*fall, spring*)

**002-795 Special Topics in Administrative Science, 1-3 cr.**

Courses provided in response to special needs that may continue. These courses may be offered more than once but are not intended to become a regular part of the graduate curriculum. The title of the specific topic is announced in the *Timetable* and entered on the transcripts of students who enroll. May be repeated once with a change in topic for degree credit. May not be applied toward graduate core requirements. P: gr st. (*on demand*)

**002-797 Internship, 1-6 cr.**

Supervised work experience in an appropriate program or agency. Students may enroll for internship credits only when such activity is included in the approved program plan. A description of activities including criteria for grading must be submitted to the student's major professor and director of graduate studies. P: MS6. (*fall, spring, summer*)

**002-798 Independent Study, 1-3 cr.**

Reading and research under the supervision of a member of the graduate faculty. Independent study credits may only be earned when this activity is included as part of an approved program plan. P: MS6. (*fall, spring, summer*)

**002-799 Thesis, 1-6 cr.**

Research and preparation of thesis document. Enrollment may be for 1-6 credits per term. Students must include 6 thesis credits in their program plan. Although additional thesis credits may be earned, a maximum of 6 credits can be applied toward a degree. P: MS7. (*fall, spring, summer*)

**008-704 Discrete Multivariate Statistical Analysis, 2 cr.**

Categorical data arises in studies where members of a population possessing a particular characteristic are counted (rather than measured). This course deals with methods for the

analysis of such data using contingency chi-square, logistic regression and long-linear models. Emphasizes computer and analysis of real sets of data. P: gr st.

**008-764 Operations Research and Management Science, 3 cr.**

Study of mathematics and mathematical models used in decision making. Mathematical models include allocation, network, location, scheduling and queuing models. Applications and case studies are considered. P: undergraduate courses in calculus and matrix or linear algebra, or cons inst. (*spring, odd years*)

**008-767 Design of Experiments, 4 cr.**

Statistical theory and practice underlying the design of scientific experiments, and methods of analysis. Replication, randomization, error, linear models, least squares, crossed and nested models, blocking, factorial experiments, Latin squares, confounding, incomplete blocks, split-plots. P: gr st.

**008-768 Multivariate Statistical Analysis, 4 cr.**

Principles and practice in the analysis of multivariate data. Correlation, partial correlation, principle components, factor analysis, discriminant functions, canonical correlation, cluster analysis, multidimensional scaling. Emphasis on computer analysis of actual data. P: gr st.

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**Undergraduate/Graduate Courses (500-699 Level)**

**216-624 Marketing Research, 3 cr.**

Techniques of obtaining and analyzing information about marketing problems; obtaining and interpreting data from primary and secondary sources for marketing decisions. (*fall*)

**216-626 Marketing Management, 3 cr.**

Strategic interrelationships, development of analytical techniques and abilities, and decision making in marketing. (*spring*)

**216-649 Cases in Finance, 3 cr.**

The efficient management of working capital; analysis and projection of financial data for planning, control, and dealing effectively with the financial dimensions of management decisions. (*spring*)

**216-651 Design of Computer-Assisted Systems, 3 cr.**

Designing computer-assisted processes in organizations: feasibility analysis, design, imple-

mentation and evaluation; management information and decision support systems; fundamentals of sociotechnical systems design. (*fall, spring*)

**216-662 Seminar in Human Resources Management, 3 cr.**

Analysis of personnel problems and issues and their translation into corporate personnel policies; urban, cultural, and legal realities in personnel matters; decisions affecting the development and administration of personnel policies. (*spring*)

**216-688 Rational Decision Making, 3 cr.**

Quantitative and non-quantitative approaches to rational decision-making in organizations, including probability, decision analysis, gaming and risk assessment. (*fall*)

**298-607 Introduction to Econometrics, 3 cr.**

Use of mathematical concepts and techniques in the analysis of economic phenomena; use of statistical methods to estimate equations describing economic events. P: 298-203; 600-201 or 202; 255-205 or 600-260. (*spring, odd years*)

**362-660 Resource Management Strategy, 3 cr.**

Applications of system analysis principles to designing resource management systems and developing strategies for maintaining optimum environmental utilities. Decision models and the role of economic systems in resource management. (*spring*)

**600-555 Applied Mathematical Optimization, 3 cr.**

Analytical and numerical optimization techniques; linear, nonlinear, integer, and dynamic programming. Techniques applied to problems of water, forest, air, and solid-waste management. (*fall, even years*)

**600-665 Business and Industrial Statistics, 4 cr.**

Statistical methods commonly applied in business and industry: quality control, control charts and acceptance sampling; multiple regression; time series, smoothing and forecasting; index numbers. (*fall, odd years*)

**778-516 American Legislative Process, 3 cr.**

Legislative institutions and policies, emphasizing the U.S. Congress. The role of legislatures in American politics; elections, representation, formal and informal legislative institutions and practices, leadership, interest groups and lobbying, and the role of legislatures in policy innovation. (*spring, odd years*)

**778-610 Intergovernmental Relations, 3 cr.**  
The relations among the federal, state and local units of government; federalism, intergovernmental revenues and expenditures, intergovernmental policies and grants-in-aid. *(fall, odd years)*

**835-506 Regulatory Policy and Administration, 3 cr.**  
The origins, purposes and operation of regulatory agencies and the programs in the U.S.: theories of regulation, issues and controversies in regulatory policy, decision-making in such areas as economic regulation, public health, consumer protection, workplace safety and environmental quality. *(fall, odd years)*

**835-576 Administrative Law, 3 cr.**  
Administrative law in the American federal (intergovernmental) system; fundamentals of administrative law; connections between administrative law issues and issues of public policy; and legal dimensions of administrative problems.

**835-578 Environmental Law, 3 cr.**  
An overview of major environmental laws, including their historical development, structure and implementation by federal, state and local agencies. *(fall)*

**835-602 Environmental and Resource Economics, 3 cr.**  
Applications of tools and concepts in current economic decision making, with special emphasis upon common property resources management. *(spring)*

**835-606 State and Local Government, 3 cr.**  
The structure and operation of state and local governments and their administration of public policies and programs; emphasizes issues of importance to each level, the interaction between levels, and Wisconsin as a case study. *(fall, even years)*

**835-608 Public Policy Analysis, 3 cr.**  
An introduction to public policy analysis and to the policy-making process, primarily in American government. Political aspects of policy analysis, models and methods for rational design of public policies, applications of policy studies to particular public problems. *(fall)*

**835-615 Public and Nonprofit Budgeting, 3 cr.**  
The purposes and attributes of major public budgetary systems; principles and methods in designing and managing relationships among

program planning, policy planning and budgetary operations; applications of analytical and decision-assisting tools to public budgetary operations. *(spring)*

**835-620 Health Care Policy and Administration, 3 cr.**  
Examines contemporary health care problems in the United States, emerging controversies in public policy, and challenges to effective health care management. Exercises and projects acquaint students with strategies for dealing with major health care issues. P: 835-201 or 202. *(spring, even years)*

**835-621 Techniques and Methods of Planning Analysis, 3 cr.**  
The application of basic tools for urban and regional planning; sources of quantitative data and other information; techniques and methods of analysis of population, economics, land use, housing and transportation. *(spring)*

**835-651 Decision Theory and Methods, 3 cr.**  
Quantitative and qualitative dimensions of decision-making; usefulness of various theories and methods of making decisions in individual, group, organizational and policy-making contexts. *(fall)*

**835-652 Planning Theory and Methods, 3 cr.**  
Planning for public and not-for-profit agencies; theory and practical significance of planning; the political and administrative setting of planning operations; and methods of planning analysis such as strategic planning. *(spring)*

**835-653 Cost-Benefit Analysis, 3 cr.**  
Intensive analysis of procedures involved and conceptual basis of project evaluation from both public and private sector viewpoints. Hands-on experience is gained through worksheets and student projects.

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### **Undergraduate Courses (300-400 Level)**

Graduate credit for undergraduate courses with 300 or 400 level numbers is available only with special permission of the instructor and the student's graduate adviser or the associate dean of graduate studies. An assigned study card is required for registration in one of these courses, under either the XXX-596 or XXX-696 number.

# ■ Environmental Science and Policy

Environmental Science and Policy is appropriate for students with interests in the scientific and/or public policy and administration aspects of environmental problems. The program has two tracks to accommodate these interests:

Environmental Science  
Environmental Policy and Administration

Students choose to emphasize one of the tracks, depending on future career interests.

Students who study **Environmental Policy and Administration** typically enter governmental agencies at the national, state or local level, or nonprofit organizations where their work involves policy analysis, planning, or administration. Some prefer positions in legislative bodies, environmental organizations, or industry where administrative or analytic work is combined with politics, public relations, education or advocacy.

Students who complete the **Environmental Science** track will be prepared for positions of responsibility dealing with a variety of environmental problems in industry, consulting, laboratory/engineering firms, and/or governmental agencies. Students are also well prepared for further graduate work in related or similar areas. Emphasis is on developing skills appropriate for designing and conducting scientific investigations, interpreting data, making responsible decisions and communicating the results of environmental studies to other scientists, decision makers and the general public.

## Admission Requirements

Each student's prior academic work is evaluated when he or she applies. Current GRE general test scores are required of all applicants.

Applicants with interests in the **Environmental Science** track are expected to have a strong background in the natural sciences including college courses in biology, chemistry, physics, earth science, and mathematics. A knowledge of statistics and computer science must be demonstrated. Additional requirements may be specified by a particular specialization.

Applicants with interests in **Environmental Policy and Administration** are expected to

have a satisfactory background in public policy and administration, political science, public policy or public administration.

## Degree Requirements

Students who are adequately prepared when they enter the program may earn the degree by satisfactorily completing 24-30 credits of course work, plus a 6-credit thesis. Those who lack appropriate prerequisites may need to take additional courses to strengthen their backgrounds. Credit earned in undergraduate courses numbered at the 100- or 200-level cannot be applied toward the graduate degree.

Credit requirements are determined by the student's chosen specialization and program of study. At least 12 credits of 700-level courses must be included. Students develop individual program plans with the assistance and approval of their major professors and graduate committees.

## ■ General Core Requirements

All students must successfully complete:

- 008-701 Perspectives in Environmental Science, 3 cr.  
OR  
008-752 Environmental Policy and Administration, 3 cr.

Also:

- 008-763 Seminar in Environmental Science and Policy, 3 cr.  
008-799 Thesis, 6 cr.

By the time a student has successfully completed 15 credits, he or she should have developed a thesis proposal. The proposal is reviewed and approved by the major professor, the graduate committee, and the associate dean of graduate studies before the student begins the research. Approval of the thesis proposal places the student in candidacy for the degree. Successful defense of the written thesis and completion of all courses in the student's program plan result in awarding of the M.S. degree.

## ■ Track Requirements

Students in Environmental Science and Policy choose one of two tracks: Environmental Science or Environmental Policy and Administration. Each requires successful completion

of required core courses. Within their chosen tracks, students normally select a specialization relating to the specific problem or interest they plan to explore in their theses. Students are not limited to courses listed in only one track however. With the aid of advisers, they may choose courses appropriate to their individual interests and programs of study.

### Environmental Science Track

Required courses:

- 008-701 Perspectives in Environmental Science, 3 cr.
- 008-762 Natural Science Seminar, 1 cr.
- 008-763 Seminar in Environmental Science and Policy, 3 cr.

Specializations are:

- Ecosystems studies
- Resource management
- Waste management and resource recovery
- Quantitative methods and data analysis

### Ecosystems Studies

Students may address problems of general features of ecosystems such as nutrient regeneration, productivity, or trophic relationships. They can also focus on such specific questions as endangered species, predation and competition. Natural, managed and disturbed ecosystems are examined in classroom and field activities. Studies on aquatic systems can take advantage of the University's location on Green Bay and participation in the University of Wisconsin Sea Grant Program.

All students are encouraged to include 362-675 Ecological Dynamics, in their programs of study unless they have completed equivalent ecology courses as part of their undergraduate work. All students are encouraged to complete either 008-767 Design of Experiments or 008-768 Multivariate Statistical Analysis, and 008-715 Seminars in Ecology and Evolution.

Aquatic systems (6 credits):

- 008-749 Wetland Ecology and Management, 3 cr.
- 362-530 Hydrology, 3 cr.
- 362-601 Stream Ecology, 3 cr.
- 362-603 Limnology, 3 cr.

Terrestrial systems (6 credits):

- 008-740 Ecosystems Management, 3 cr.
- 204-511 Plant Physiology, 4 cr.

- 362-520 The Soil Environment, 3 cr.
- 362-563 Plants and Forest Pathology, 3 cr.

Additional courses may be selected with adviser's assistance.

### Resource Management

This specialization is for students who wish to study concepts of natural resource management. Emphasis is on evaluating alternative strategies for effective policy implementation and planning for the future. Principles and techniques of quantitative analysis of resources are applied to problems of supply, distribution, and utilization of energy, minerals and bioresources.

Resource utilization and management (9 credits):

- 008-715 Seminars in Ecology and Evolution, 1 cr.
- 008-733 Ground Water: Resources and Regulations, 3 cr.
- 008-740 Ecosystems Management, 3 cr.
- 008-766 Waste Management/Resource Recovery, 3 cr.
- 298-602 Resource Economics Analysis, 3 cr.
- 362-520 The Soil Environment, 3 cr.
- 362-615 Solar and Alternate Energy Systems, 3 cr.
- 362-660 Resource Management Strategy, 3 cr.

Methods and techniques (5-7 credits):

- 008-764 Operations Research and Management Science, 3 cr.
- 008-767 Design of Experiments, 4 cr.
- 008-768 Multivariate Statistical Analysis, 4 cr.
- 266-551 Data Structures, Storage and Retrieval, 3 cr.
- 362-632 Hydrogeology, 3 cr.
- 362-654 Remote Sensing of the Environment by Satellite, 3 cr.
- 600-555 Applied Mathematical Optimization, 3 cr.

Additional courses may be selected with adviser's assistance.

### Waste Management and Resource Recovery

Courses in this specialization address the recognized need for individuals with the scientific and technical knowledge to plan and evaluate waste treatment systems. Students study the handling, processing, treatment and disposal of municipal, industrial, and agricultural wastes.

They use mathematical tools for optimizing treatment costs and develop skills in management that apply to public agencies, consulting firms, and industries.

Waste processing and disposal (9 credits):  
 008-766 Waste Management and Resource Recovery, 3 cr.

And, 6 credits from:  
 008-724 Hazardous and Toxic Materials, 3 cr.  
 362-518 Industrial Pollution Control Techniques, 2 cr.  
 362-519 Industrial Pollution Control Field Trips, 1 cr.  
 362-535 Water and Waste Water Treatment, 3 cr.

The remaining credits may be selected from this suggested list of electives. Choices will be determined by the student's interests (e.g., management, land disposal, mathematical modeling).

Quantitative methods:  
 008-764 Operations Research and Management Science, 3 cr.  
 008-767 Design of Experiments, 4 cr.  
 008-768 Multivariate Statistical Analysis, 4 cr.

Basic science and techniques:  
 008-733 Ground Water: Resources and Regulations, 3 cr.  
 204-602 Advanced Microbiology, 3 cr.  
 225-617 Nuclear Physics and Radiochemistry, 3 cr.  
 225-618 Nuclear Physics and Radiochemistry Laboratory, 1 cr.  
 362-520 The Soil Environment, 3 cr.  
 362-530 Hydrology, 3 cr.  
 362-615 Solar and Alternate Energy Systems, 3 cr.  
 362-632 Hydrogeology, 3 cr.  
 362-640 Environmental Chemistry, 3 cr.  
 362-641 Environmental Chemistry Laboratory, 1 cr.  
 362-654 Remote Sensing of the Environment by Satellite, 3 cr.

**Quantitative Methods and Data Analysis**  
 Sophisticated analytical techniques are finding increased applications in the environmental sciences. Students interested in studying quantitative methods for processing, analyzing

and integrating complex data sets can choose this specialization. Techniques of mathematical and statistical analysis are studied on theoretical and practical levels. Students learn methods of data synthesis, model formulation, and graphic display using various types of computer technology.

Required courses (7-8 credits):  
 008-764 Operations Research and Management Science, 3 cr.  
 008-767 Design of Experiments, 4 cr.  
 008-768 Multivariate Statistical Analysis, 4 cr.

Remaining credits may be chosen from the following courses.

Statistical analysis:  
 008-704 Discrete Multivariate Statistical Analysis, 2 cr.  
 600-560 Theory of Probability, 3 cr.  
 600-561 Mathematical Statistics, 3 cr.  
 600-665 Business and Industrial Statistics, 4 cr.

Mathematical modeling and mathematics:  
 600-505 Ordinary Differential Equations, 3 cr.  
 600-509 Systems of Ordinary Differential Equations, 3 cr.  
 600-520 Linear Algebra I, 3 cr.  
 600-550 Numerical Analysis, 3 cr.  
 600-555 Applied Mathematical Optimization, 3 cr.

Computer science and information processing:  
 266-551 Data Structures: Storage and Retrieval, 3 cr.  
 266-553 Computer Organization and Programming, 3 cr.  
 266-651 Database Management Systems, 3 cr.  
 266-652 Operating Systems, 3 cr.

Applicable natural science courses (not inclusive):  
 008-724 Hazardous and Toxic Materials, 3 cr.  
 362-518 Industrial Pollution Control Techniques, 2 cr.  
 362-530 Hydrology, 3 cr.  
 362-660 Resource Management Strategy, 3 cr.  
 362-675 Ecological Dynamics, 4 cr.

**Environmental Policy and Administration Track**

Required courses:

- 008-752 Environmental Policy and Administration, 3 cr.
- 008-763 Seminar in Environmental Science and Policy, 3 cr.
- 008-708 Public Policy Analysis, 3 cr.
- OR
- 835-608 Public Policy Analysis, 3 cr.

In addition, students must choose at least one course from each of the following areas. The program plan is then completed with more courses selected from any of these areas or from those listed in Environmental Science, in a way that best matches the students' interests and career aspirations. Internships and independent study may be selected as part of the three electives as well. A total of 30 credits plus the 6 credit thesis is required.

Areas of emphasis are:

- Institutions and processes
- Management
- Methodology
- Public policy

**Institutions and Processes**

Students here have the opportunity to focus on the characteristics and operation of governmental institutions and the behavior of individuals involved in decision-making processes.

- 002-753 Administrative Theory and Behavior, 3 cr.
- 778-516 American Legislative Process, 3 cr.
- 778-610 Intergovernmental Relations, 3 cr.
- 835-514 Administrative Law, 3 cr.
- 835-606 State and Local Government, 3 cr.
- 835-615 Public and Nonprofit Budgeting, 3 cr.

**Management**

Course work in this area emphasizes organizational theory, design, and evaluation. Students have the opportunity to develop administrative skills such as budgeting, personnel management, and decision making.

- 002-750 Organizational Decision Making, 3 cr.
- 002-755 Organizational Analysis, 3 cr.
- 002-757 Management of Complex Organizations, 3 cr.
- 002-770 Organizational Change and Development, 3 cr.

**Methodology**

Courses with this emphasis focus on skills and methods appropriate to rational decision making on matters of policy and administration. Decision analysis, social science research methods, and statistical analysis are among the topics in the area.

- 002-760 Social Research Methods, 3 cr.
- 008-768 Multivariate Statistical Analysis, 4 cr.
- 009-765 Program Evaluation, 3 cr.
- 298-607 Introduction to Econometrics, 3 cr.
- 835-621 Techniques and Methods of Planning Analysis, 3 cr.
- 835-651 Decision Theory and Methods, 3 cr.
- 835-652 Planning Theory and Methods, 3 cr.
- 835-653 Cost-Benefit Analysis, 3 cr.

Note: Additional methodology courses are available. Students should consult one of the program advisers to determine which courses are most appropriate for the program of study.

**Public Policy**

Study in this area emphasizes substantive policies in regulation, environmental protection, science and technology, and energy and natural resources. Policy-making and administrative processes are dealt with in those same areas. Approaches and methods in policy analysis and evaluation are also studied.

- 008-713 Energy, Natural Resources, and Public Policy, 3 cr.
- 835-506 Regulatory Policy and Administration, 3 cr.
- 835-578 Environmental Law, 3 cr.
- 835-602 Environmental and Resource Economics, 3 cr.



## Faculty

**Alesch, Daniel J.**, Professor, Public and Environmental Affairs (Political Science). B.S. (1962), M.S., Urban and Regional Planning (1964) UW-Madison; M.A. (1969), Ph.D. (1970) University of California-Los Angeles. Planning and decision making, policy analysis, systems design, natural hazards risk reduction, social welfare, business and public policy, waste water policy.

**Davis, Gregory J.**, Associate Professor, Natural and Applied Sciences (Mathematics). B.S. (1981) UW-Green Bay; M.A. (1985), Ph.D. (1987) Northwestern. Smooth, discrete, and chaotic dynamical systems; fractals; mathematical modeling of biological systems; celestial mechanics.

**Day, Harold Jack**, Professor, Natural and Applied Sciences (Engineering). B.S. (1952), M.S. (1953), Ph.D. (1963) UW-Madison. Water resources, fluid mechanics, hydrology and related applications of engineering to society and technology. Regional water quality and associated land management and flood plain management. Resource management.

**Furlong, Scott R.**, Assistant Professor, Public and Environmental Affairs (Political Science). B.A. (1985) St. Lawrence University; M.P.A. (1987), Ph.D. (1993) The American University. Regulatory policy, environmental policy, legislative politics, administrative law, public policy and administration, research methods, and interest group influence on the administrative rulemaking process.

**Girard, Dennis M.**, Professor, Information and Computing Sciences (Mathematics and Statistics). B.S. (1961), M.A. (1962) Detroit; Ph.D. (1968) Ohio State. Applications of statistics in the life sciences with emphasis in the area of environmental contaminants, biometrics, biomathematics, multivariate statistical analysis, Fourier analysis, graph theory, econometric modeling, statistical computing.

**Harris, Hallet J.**, Herbert Fisk Johnson Professor, Natural and Applied Sciences; Director, Institute for Land and Water Studies.

B.A. (1961) Coe College; M.S. (1965), Ph.D. (1966) Iowa State. Animal and wetland ecology; management of coastal areas, wildlife management.

**Howe, Robert W.**, Associate Professor, Natural and Applied Sciences (Biology). B.S. (1974) Notre Dame; M.S. (1977), Ph.D. (1981) UW-Madison. Terrestrial ecology and conservation biology. Bird population dynamics in fragmented forests. Natural history and biogeography of vertebrates. Evolutionary ecology.

**Jowett, David** Professor, Natural and Applied Sciences (Statistics). B.Sc. (1956) University College of North Wales; Ph.D. (1959) Wales. Statistics, statistical computing. Design of experiments, multivariate analysis, especially as applied to problems in bioscience and social science. Population genetics and population modeling. Computer models of biological systems. Ecological genetics, plant breeding, agriculture. Biometrics, biomathematics, ecosystems modeling.

**Kraft, Michael E.**, Herbert Fisk Johnson Professor, Public and Environmental Affairs (Political Science). A.B. (1966) University of California-Riverside; M.A. (1967), Ph.D. (1973) Yale. (on leave 1993-94) American politics and government; public policy analysis; congressional behavior and legislative processes; environmental policy; the political context of policy implementation; politics of nuclear waste disposal.

**Lyon, John M.**, Assistant Professor, Natural and Applied Sciences (Chemistry). B.S. (1977) Lehigh; Ph.D. (1983) Rutgers. Transition metal chemistry. Reactions of transition metals in high oxidation states as oxygenation catalysts. Photochemical energy conversion systems.

**Marker, James C.**, Assistant Professor, Human Biology (Exercise Physiology). B.S. (1979) Weber State College; M.S. (1981) Utah State University; Ph.D. (1985) Brigham Young University; Post-Doctoral Fellow (1985-88) Washington University School of Medicine. Exercise physiology/endocrinology; the role/response of hormones during exercise;

metabolic responses to exercise and exercise training; adaptations to exercise training in the elderly; the role of the sympathoadrenal system and glucose counter-regulatory system during exercise; exercise/muscle physiology; exercise testing and prescription; *kinesiology*.

**McIntosh, Thomas H.**, Professor, Natural and Applied Sciences (Earth Science). B.S. (1956), M.S. (1958), Ph.D. (1962) Iowa State.

Soils, agronomic systems, biogeochemical cycles, especially nitrogen, remote sensing, geographic information systems.

**Moran, Joseph M.**, Barbara Hauxhurst Cofrin Professor, Natural and Applied Sciences (Earth Science). B.A. (1965), M.S. (1967) Boston College; Ph.D. (1972) UW-Madison.

Nature of climatic change, air pollution meteorology. Applications of paleoclimatic reconstruction techniques to Glacial-age evidence. Environmental implications of current climatic changes. Quaternary climatology, geology.

**Morgan, Michael D.**, Professor, Natural and Applied Sciences (Biology). B.S. (1963) Butler; M.S., Ph.D. (1968) Illinois.

Relations between climatic change and plant production and distribution. Terrestrial plant ecology and conservation biology. *Reproductive ecology of plants*.

**Nair, V.M.G.**, Professor, Natural and Applied Sciences (Forest and Plant Pathology, Mycology). B.Sc., Madras; M.Sc., Aligarh; Associate I.A.R.I., Agricultural Ministry, New Delhi; Ph.D. (1964) UW-Madison.

International quarantine and disease control programs of plant-forest tree diseases. Weedicide-Silvicide applications in the establishment of exotic tree species in developing countries and their aftereffects on wildlife and fishes. Host parasite interactions of vascular wilt pathogens. Electron and three-dimension electron microscopy.

**Niedzwiedz, William R.**, Professor, Public and Environmental Affairs (Geography). B.S. (1969), M.S. (1972) Massachusetts; Ph.D. (1981) Virginia Polytechnic.

Three-dimensional projection techniques as tools for research, instruction and public presentation; remote sensing applications; land use planning; natural resource planning; environmental impact assessment; designing environments.

**Norman, Jack C.**, Professor, Natural and Applied Sciences (Chemistry). B.S. (1960) New Hampshire; Ph.D. (1965) UW-Madison.

Nuclear and radio-chemistry; environmental radioactivity. Distribution and cycling of natural and artificial radionuclides in the environment. Solar and other alternative sources of energy. Appropriate technology applications and education.

**Rhyner, Charles R.**, Professor, Natural and Applied Sciences (Physics). B.S. (1962), M.S. (1964), Ph.D. (1967) UW-Madison.

Applied physics including radiation dosimetry, electronic instrumentation, and acoustical noise. Primary research interest is in modeling solid waste management systems. Radiological physics.

**Sager, Dorothea B.**, Associate Professor, Human Biology (Population Dynamics and Medical Technology). B.A. (1959) Lawrence; M.S. (1961) Iowa; Ph.D. (1968) UW-Madison.

Physiology of reproduction; hormonal controls. Developmental and reproductive effects of environmental contaminants. Biological factors in family planning. Reproductive physiology, zoology, *embryology*.

**Sager, Paul E.**, Barbara Hauxhurst Cofrin Professor, Natural and Applied Sciences (Biology). B.S. (1959) Michigan; M.S. (1963), Ph.D. (1967) UW-Madison.

Ecology of aquatic communities including nutrient studies in the phytoplankton of freshwater lakes. Eutrophication of lakes. Ecological effects of nutrient enrichment and water quality deterioration. *Limnology*.

**Scheberle, Denise Lynne**, Assistant Professor, Public and Environmental Affairs (Political Science). B.S. (1982), M.P.A. (1984) Wyoming; Ph.D. (1991) Colorado State.

Environmental policy, public administration, American government and public policy, state and local government, indoor

air quality, radon control programs, hazardous waste policy.

**Schwartz, Leander J.**, Professor, Natural and Applied Sciences (Biology). B.S. (1957) UW-Platteville; M.S. (1959), Ph.D. (1963) UW-Madison.

Resource recovery: anaerobic digestion of organic wastes and/or use as fertilizers and in other applications; bacterial survival in aquatic ecosystems.

**Sell, Nancy J.**, Professor, Natural and Applied Sciences (Chemistry). B.A. (1967) Lawrence; M.S. (1968) Northwestern; M.S. (1987) Institute of Paper Chemistry; Ph.D. (1972) Northwestern.

Industrial resource recovery, pollution control. Industrial energy conservation by raw material and waste recycling and reclamation.

**Stieglitz, Ronald D.**, Professor, Natural and Applied Sciences (Earth Science-Geology). B.S. (1963) UW-Milwaukee; M.S. (1967), Ph.D. (1970) Illinois.

Environmental geology, stratigraphic analysis, sedimentary geology, applications of geology to land use problems, groundwater resources.

**Stoll, John R.**, Professor, Public and Environmental Affairs (Economics). B.S. (1973) UW-Green Bay; M.S. (1977), Ph.D. (1980) Kentucky.

Natural resources and environmental economics, econometrics, contingent valuation methodology, economics of recreation and leisure, cost-benefit analysis, regional economics.

**Wenger, Robert B.**, Professor, Natural and Applied Sciences (Mathematics). B.S. (1958) Eastern Mennonite; M.A. (1962) Pennsylvania State; Ph.D. (1969) Pittsburgh.

Systems analysis. Theory and applications of mathematical optimization. Resource recovery and solid waste management problems. Energy usage in solid waste systems. Management models for controlling ragweed pollen. Algebra, operations research.

**Wiersma, James H.**, Professor, Natural and Applied Sciences (Chemistry). B.S. (1961) UW-Oshkosh; M.S. (1965), Ph.D. (1967)

Missouri-Kansas City.

Assessment of effects of water pollutants and water pollution abatement procedures on aquatic ecosystems. Development of new analytical chemical methods with emphasis on techniques applied to environmental problems. General interest areas—water chemistry and hazardous and toxic materials.

## Course Descriptions

In the course descriptions in this catalog, commonly used abbreviations include:

cr	credits
P	prerequisite course or experience
Rec	recommended course or experience
gr st	graduate standing
fr	freshman
soph	sophomore
jr	junior
sr	senior
cons inst	consent of instructor

## Graduate-Only Courses (700-Level)

### 008-701 Perspectives in Environmental Science, 3 cr.

Applications of the scientific method to contemporary problems. Emphasis is on experimental design and data acquisition and interpretation. Major problem areas in the environmental sciences are reviewed through lectures and student research papers. Principal areas of concern are aquatic studies, waste management/resource recovery, environmental health, and rehabilitation of ecosystems. (*fall*)

### 008-704 Discrete Multivariate Statistical Analysis, 2 cr.

Categorical data arises in studies where members of a population possessing a particular characteristic are counted (rather than measured). This course deals with methods for the analysis of such data using contingency chi-square, logistic regression and long-linear models. Emphasizes computer analysis of real sets of data. P: gr st.

### 008-708 Public Policy Analysis, 3 cr.

Public policy analysis methods and their role in the policy-making process, primarily in American government. Topics include: approaches to the study of public policy, policy formulation and adoption, methods for assessment of policy alternatives, ethics and policy

analysis, policy implementation and evaluation, and the utilization of policy analysis in decision making. P: gr st.

**008-713 Energy, Natural Resources and Public Policy, 3 cr.**

Public policy issues related to energy and other natural resources with a special emphasis on the United States. Topics include fossil energy, nuclear energy, solar and other alternative sources of energy; natural resources ranging from soil, water and minerals to wildlife, forests and parks. P: gr st. (*spring, even years*)

**008-715 Seminars in Ecology and Evolution (subtitle), 1 cr.**

A forum for discussion of contemporary ideas in ecology and evolution. Topics and weekly readings are chosen from the current scientific literature; examples from recent semesters include ecosystem stability, competition and coexistence, group selection, trophic dynamics, and complex species interactions. May be repeated with change in topic to maximum of three credits. (*fall, spring*)

**008-724 Hazardous and Toxic Materials, 3 cr.**

The handling, processing, and disposal of materials which have physical, chemical, radiochemical, and biological properties presenting hazards to humans; procedures for safe handling and for compliance with regulations. P: undergraduate courses in chemistry, physics, bioorganic chemistry or equivalent. (*spring*)

**008-733 Ground Water: Resources and Regulations, 3 cr.**

Geology, properties, flow, and pollution of ground water systems: Techniques of aquifer characterization and water quality monitoring; regulatory and policy approaches to protect ground water. P: one course each in physical geology and college chemistry. (*fall, even years*)

**008-740 Ecosystems Management, 3 cr.**

Imparts the underutilized potential of our present understanding of ecology and system dynamics to management problems associated with human dominated and natural ecosystems. (*spring, odd years*)

**008-749 Wetland Ecology and Management, 3 cr.**

Ecological processes and characteristics of wetlands such as primary productivity, hydrology, decomposition and nutrient dynamics are studied. Wetland classification and delineation systems are examined and applied in the field. Management practices and potential as well as

current approaches to values assessment are addressed. P: 862-302 or equivalent. (*spring*)

**008-752 Environmental Policy and Administration, 3 cr.**

The political and institutional aspects of environmental policy-making and implementation, including issues in environmental policy analysis. Emphasis is on national policy processes in the United States, but attention is given also to global and state and local environmental problems and public policy. P: gr st. (*spring*)

**008-762 Natural Science Seminar, 1 cr.**

An opportunity for natural science students to gain knowledge about a variety of science specialty areas, and to give them experience in public speaking. Requirements include attending the seminars, writing a critique of each, and presenting one seminar on the student's own research. P: gr st. (*fall, spring*)

**008-763 Seminar in Environmental Science and Policy, 3 cr.**

Capstone course of the program in Environmental Science and Policy. Selected contemporary environmental issues such as acid deposition, radioactive waste management or groundwater contamination are chosen for review and analysis in a seminar format. Both policy and scientific aspects of the topics are addressed. P: 12 graduate credits. (*fall*)

**008-764 Operations Research and Management Science, 3 cr.**

Study of mathematics and mathematical models used in decision making. Mathematical models include allocation, network, location, scheduling and queuing models. Applications and case studies are considered. P: undergraduate courses in calculus and matrix or linear algebra, or cons inst. (*spring, odd years*)

**008-766 Waste Management/Resource Recovery, 3 cr.**

Topics include generating, processing, and disposing of municipal, industrial, and agricultural waste materials with emphasis on the technical and economic feasibility of various recycling processes. P: gr st. (*fall*)

**008-767 Design of Experiments, 4 cr.**

Statistical theory and practice underlying the design of scientific experiments, and methods of analysis. Replication, randomization, error, linear models, least squares, crossed and nested models, blocking, factorial experiments, Latin squares, confounding, incomplete blocks, split-plots. P: gr st.

**008-768 Multivariate Statistical Analysis, 4 cr.**

Principles and practice in the analysis of multivariate data. Correlation, partial correlation, principle components, factor analysis, discriminant functions, canonical correlation, cluster analysis, multidimensional scaling. Emphasis on computer analysis of actual data. P: gr st.

**008-778 Epidemiology, 3 cr.**

Basic concepts and methods of epidemiology: establishing criteria for research problem designs/investigating epidemiological problems, both in the community and on a global basis. Functioning of epidemiology in community health is emphasized. (*when staff is available*)

**008-783X Experimental Courses**

Courses and seminars offered by graduate faculty in response to special demand or on an experimental basis. Topics address current issues of general concern, special interests of student groups or faculty members, or special resources of visiting faculty. The title of the special topics course as announced in the *Timetable* will appear on the transcripts of the students who enroll. Credits earned in the 783X courses may not be applied toward the graduate core requirement. P: gr st. (*fall, spring*)

**008-795 Special Topics in Environmental Science and Policy, 1-3 cr.**

Courses provided in response to special needs. These may be offered more than once, but are not intended to become a regular part of the curriculum. The title of the specific topic is announced in the *Timetable* and entered on the transcript of students who enroll. May be repeated once with a change in topic for degree credit. May not be applied toward graduate core requirements. P: gr st. (*on demand*)

**008-797 Internship, 1-6 cr.**

Supervised work experience in an appropriate program or agency. Students may enroll for internship credits only when such activity is included in the approved program plan. A description of activities including criteria for grading must be submitted to the students' major professor and associate dean of graduate studies. P: Student classification of MCA6, MSC6, MSE6 or higher. (*fall, spring, summer*)

**008-798 Independent Study**

Reading and research under the supervision of a member of the graduate faculty. Independent study credits may only be earned when

this activity is included as part of an approved program plan. P: Student classification of MSA6, MSC6, MSE6 or higher. (*fall, spring, summer*)

**008-799 Thesis, 1-6 cr.**

Research and preparation of thesis document. Enrollment may be for 1-6 credits per term. All students are expected to include 6 thesis credits in their program plan. Although additional thesis credits may be earned, a maximum of 6 credits can be applied toward a degree. P: Student classification of MSA7, MSC7, or MSE7. (*fall, spring, summer*)

**002-741 Survey and Field Research Methods, 3 cr.**

Theoretical background and methodological skills necessary to use field methods and conduct survey research. Topics include: logic and theory of scientific inquiry; purposes of ethnography and ethno-methodology; methods of field research; survey research and sampling design; and application of multivariate data analysis to survey data. Emphasis is on applied experience in the analysis of quantitative and qualitative data generated by different research methodologies. P: MS5 st; undergraduate statistics, 002-760.

**002-750 Organizational Decision Making, 3 cr.**

Examines the theory of individual and group decision making, the process and consequences associated with alternative decision making styles and systems, and develops skills in the use of the major decision assisting tools. Case studies and examples from the fields of environmental management, public administration, and business or industrial management. P: gr st. (*spring*)

**002-753 Administrative Theory and Behavior, 3 cr.**

The major theories and schools of thought dealing with administrative behavior, administrative process, and organizational behavior and theory. Attention is given to the similarities and differences between public, private and nonprofit administration. P: gr st. (*fall*)

**002-755 Organizational Analysis, 3 cr.**

Analysis and design of the technical and administrative aspects of formal organizations within the context of sociotechnical systems, organizational development, and behavioral-cultural approaches. Organizations are examined as open systems consisting of inter-

dependencies among persons, groups, technologies, and environmental variables. The emphasis is prescriptive and is intended to result in improved skills in evaluating, designing, and intervening in organizations. P: MS5 and 835-652 or 002-753 or cons inst. (*fall*)

**002-757 Management of Complex Organizations, 3 cr.**

Advanced concepts and methods of managing complex organizations and multi-organizational systems in the public, nonprofit, and private sectors using a variety of learning methods. P: gr st. (*spring*)

**002-760 Social Research Methods, 3 cr.**

Theory and methods of research in the social sciences. Topics include the philosophy of science, research designs, data collection and program evaluation. Emphasis is on applied research. P: gr st. (*fall*)

**002-765 Program Evaluation, 3 cr.**

An introduction to evaluation research, emphasizing such issues as identifying program goals, choosing outcome measures, defining appropriate samples, data collection strategies, and evaluating and disseminating results. Political, administrative, and ethical problems of evaluation are considered. Much of the class is used to develop and discuss model evaluation studies. P: gr st.; graduate or undergraduate methodology course; Introductory Statistics. (*spring, even years*)

**002-770 Organizational Change and Development, 3 cr.**

Focuses on practical applications of being an organizational change agent. Emphases include facilitation, team building, process and expert consultation, sociotechnical systems theory, large scale systems change, and quality of work life. The focus is on manipulating organizational processes to achieve organizational effectiveness and satisfaction of individual needs. P: MS5 and cons inst. (*spring*)

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**Undergraduate/Graduate Courses  
(500-699 Level)**

**204-511 Plant Physiology, 4 cr.**

General physiology of vascular plants within the context of a plant life cycle: seed dormancy and germination, metabolism, transport systems, mineral nutrition, patterns of plant growth and development, growth regulators, reproduction and senescence. (*spring, odd years*)

**204-602 Advanced Microbiology, 3 cr.**

Detailed study of microorganisms from viruses to fungi in their environment. Study of both free-living and pathogenic organisms and their degrading abilities. Field trip required. (*fall*)

**204-605 Microbial Physiology, 3 cr.**

Study of microbial physiological and biochemical adaptations to temperature, oxygen, light, nutrients, and other environmental factors. Primary emphasis on the bacteria. (*spring, even years*)

**204-607 Molecular Biology, 3 cr.**

Molecular approaches to biological problems, emphasizing study of informational macromolecules. Topics include replication, control, expression, organization, and manipulation of genes; RNA processing, protein processing; transposons; oncogenes; growth factors; genetic control of development and the immune system. (*spring*)

**204-608 Molecular Biology Laboratory, 1 cr.**

Molecular biology of nucleic acids and the techniques that form the basis of biotechnology. Topics include electrophoresis, restriction mapping, hybridization, plasmid analysis, and DNA cloning (recombinant DNA library construction, screening, and mapping). (*spring*)

**225-520 Thermodynamics and Kinetics, 3 cr.**

Temperature, heat and work, thermodynamic properties of gases, solids and solutions; homogeneous and heterogeneous equilibria; thermodynamics of electrochemical cells; statistical thermodynamics; calculation of thermodynamic properties; chemical kinetics. (*fall*)

**225-530 Biochemistry, 3 cr.**

Nature and function of the important constituents of living matter, their biosynthesis and degradation; energy transformation, protein synthesis and metabolic control. (*fall*)

**225-531 Biochemistry Laboratory, 1 cr.**

Laboratory course to accompany 225-530. (*fall*)

**225-602 Advanced Organic Chemistry, 3 cr.**

Physical organic approach to chemistry: reaction mechanisms, molecular orbital theory, conservation of orbital symmetry, aromaticity, stereochemistry, linear free energy relationships, isotopes effects, pericyclic reactions, photochemistry, natural products and advanced topics in molecular spectroscopy. (*fall, odd years*)

**225-613 Instrumental Analysis, 4 cr.**

Theory and practice of analysis by instrumental methods, including methods based on absorption and emission of radiation, electro-analytic methods, chromatographic methods and radiochemical methods. *(fall)*

**225-617 Nuclear Physics and Radiochemistry, 3 cr.**

Properties and reactions of atomic nuclei; application of the properties of radioactive nuclei to the solution of chemical, physical, biological and environmental problems. *(spring, odd years)*

**225-618 Nuclear Physics and Radiochemistry Laboratory, 1 cr.**

Laboratory course to accompany 225-617. *(spring, odd years)*

**266-551 Data Structures, Storage and Retrieval, 3 cr.**

Concepts involved in storage, retrieval and processing of data, including arrays, stacks, queues, linked lists, trees and networks; design of efficient algorithms for problems such as searching, sorting, evaluation of arithmetic expressions, construction of symbol tables and memory management. *(spring)*

**266-553 Computer Organization and Programming, 3 cr.**

Binary-based number systems, data representations, machine instruction formats, assembly language programming and related systems software. Also includes microprogrammed logic, logic circuits and Boolean algebra. *(fall)*

**266-651 Database Management Systems, 3 cr.**

Network, relational and hierarchical databases; use of a data manipulation language and structured query language to query a student-created database; also includes access methods, security, integrity rules, physical organization, design criteria, normal forms and entity-relationship modelling. *(fall)*

**266-652 Operating Systems, 3 cr.**

Operating systems, techniques and philosophies behind management of computing resources, including memory management, process management, auxiliary storage management, study of some popular current operating systems. *(spring)*

**298-607 Introduction to Econometrics, 3 cr.**

An introduction to the use of mathematical concepts and techniques in the analysis of economic phenomena and of statistical meth-

ods to estimate equations describing economic events. P: 298-203; 600-201 or 202; and 255-205 or 600-260. *(spring, odd years)*

**362-518 Industrial Pollution Control Techniques, 2 cr.**

Air and water pollution control methods; nature of major existing pollutants; present government regulations; discussion of major types of industries—general manufacturing process, how and where major pollution arises, and techniques for emission control. *(fall, odd years)*

**362-519 Industrial Pollution Control Field Trips, 1 cr.**

Field course to accompany 362-518; field trips are scheduled to a variety of local industries, including a paper mill, a foundry, the Metropolitan Sewerage District plant, etc. *(fall, odd years)*

**362-520 The Soil Environment, 3 cr.**

The physical, chemical and biological properties of soil; formation, classification and distribution of major soil orders; influence of soil on agricultural, engineering, urban and water systems. Field trip. *(fall)*

**362-521 The Soil Environment Laboratory, 1 cr.**

Field and laboratory study of physical, chemical and biological properties of soils. *(fall)*

**362-530 Hydrology, 3 cr.**

Qualitative study of the principal elements of the water cycle, including precipitation, runoff, infiltration, evapotranspiration and ground water; applications to water resource projects such as low flow augmentation, flow reregulation, irrigation, public and industrial water supply and flood control. *(fall)*

**362-535 Water and Waste Water Treatment, 3 cr.**

Water and waste water treatment systems, including both sewage and potable water treatment plants and their associated collection and distribution systems. Study of the unit operations, physical, chemical and biological, used in both systems. *(spring, even years)*

**362-563 Plants and Forest Pathology, 3 cr.**

Important diseases of forest, shade and orchard trees and diseases of representative economic plants; fungus deterioration in wood storage, its economic importance and methods of control. Field trips. *(fall)*

**362-601 Stream Ecology, 3 cr.**

Structure and function of stream ecosystems. Functional relationships of feeding groups, nutrient spiralling and organic matter processing as responses to stream morphology, stream order and watershed conditions. Field sampling of northeastern Wisconsin streams. *(fall, even years)*

**362-603 Limnology, 3 cr.**

Physical, chemical and biological interactions in lakes and streams as expressed in the nature and dynamics of aquatic communities; laboratory and field techniques used in characterizing aquatic environments. *(fall, odd years)*

**362-615 Solar and Alternate Energy Systems, 3 cr.**

Study of alternate energy systems which may be the important energy sources in the future, such as solar, wind, biomass, fusion, ocean thermal, fuel cells and magnetohydrodynamics. *(spring, odd years)*

**362-632 Hydrogeology, 3 cr.**

Introduction to geological and physical principles governing ground water flow. Description of aquifer properties, chemical processes, equation of flow; well hydraulics, and environmental concerns. *(spring, odd years)*

**362-640 Environmental Chemistry, 3 cr.**

The physical, chemical and biological processes that affect the composition of air and water. Chemical reactions in polluted and unpolluted environments; dispersal processes; methods of control for various pollutants.

**362-641 Environmental Chemistry Laboratory, 1 cr.**

Laboratory exercises, including field methods, monitoring and analysis techniques to accompany 362-640.

**362-654 Remote Sensing of the Environment by Satellite, 3 cr.**

Large area, small scale analysis of earth surface features by satellite imagery and data. Manual and computer-assisted manipulation of multispectral images with respect to vegetation, geology, soils, water resources and land use. *(spring)*

**362-660 Resource Management Strategy, 3 cr.**

Applications of systems analysis principles to designing resource management systems and developing strategies for maintaining optimum environmental utilities. Decision models and

the role of economic systems in resource management. *(spring)*

**362-675 Ecological Dynamics, 4 cr.**

Advanced exploration of key principles of ecology. Theoretical concepts are linked with practical applications in the fields of evolutionary ecology, population dynamics, community ecology and ecosystems ecology. Field trips. *(fall)*

**478-602 Human Physiology, 3 cr.**

Physiological functions of major human organs other than central nervous system: cell physiology, enzymes, cell energetics; muscle function; autonomic nervous system; endocrine system; blood, oxygen and circulatory system; immune system; kidney, digestion; and the role of physiology in diseases and medicine. *(fall)*

**478-613 Neurophysiology, 3 cr.**

Physiological mechanisms in nervous system function: human neuroanatomy; neuron chemical and electrical functions; synaptic pharmacology; sensory receptors; effects of chemicals and toxins; neural information processing in sensory and motor systems; neural bases for learning and memory; medical implications. *(spring)*

**600-505 Ordinary Differential Equations, 3 cr.**

Solutions and applications of first and higher order linear differential equations; the meanings of existence and uniqueness theorems; nonlinear differential equations; modelling physical and biological systems. *(spring)*

**600-509 Systems of Ordinary Differential Equations, 3 cr.**

Systems of linear, first-order differential equations, making use of matrix algebra with eigenvectors and eigenvalues, and numerical methods; applications; nonlinear differential equations. *(fall, odd years)*

**600-511 Advanced Calculus, 3 cr.**

Jacobians; transformation of coordinates; functional dependence; constrained extreme and Lagrange multipliers; line, surface and volume integrals; scalar and vector fields; gradient, divergence and curl; divergence theorem; Stokes' theorem. *(fall, odd years)*

**600-512 Real Analysis, 3 cr.**

Basic ideas of real analysis; sets and functions; topology of the real numbers; sequences and series of real numbers; limits of functions; the



derivative; the Riemann integral; sequences and series of functions. (*spring, odd years*)

**600-520, 521 Linear Algebra I, II, 3, 3 cr.** Matrices and vector space concepts. Systems of linear equations, matrices, determinants, vectors in two- and three-space, vector spaces, linear transformations, eigenvalues, and eigenvectors; positive-definite matrices, normal forms, the principal axis theorem, applications. (*520: fall, spring; 521: spring, even years*)

**600-528 Introduction to Algebraic Structures, 3 cr.**

Groups, rings, and fields as organizing ideas. Basic structure theorems. Applications. (*fall*)

**600-550 Numerical Analysis, 3 cr.**

Application of computer techniques in solving various mathematical and engineering related problems: solutions of equations, factorization of polynomials, solutions of systems of equations, interpolation, curve fitting, differentiation, integration, and solutions of differential equations. (*spring, even years*)

**600-555 Applied Mathematical Optimization, 3 cr.**

Analytical and numerical optimization techniques; linear, nonlinear, integer, and dynamic programming. Techniques applied to problems of water, forest, air and solid-waste management. (*fall, even years*)

**600-560 Theory of Probability, 3 cr.**

Probability as a mathematical system, with applications; basic probability theory; combinatorial analysis; distribution functions and probability laws; mean and variance of a probability law; expectation of a function with respect to a probability law; normal, Poisson, and related probability laws; random variables. (*fall, even years*)

**600-561 Mathematical Statistics, 3 cr.**

Sample moments and their distributions; tests of hypotheses; point and interval estimation; regression and linear hypotheses; nonparametric methods; sequential methods. (*spring, even years*)

**600-585 Foundations of Geometry, 3 cr.**

Intuitive and deductive introductions to Euclidean, affine, hyperbolic, spherical, elliptic and projective geometries. (*spring*)

**600-610 Complex Analysis, 3 cr.**

Algebra and geometry of complex numbers; analytic functions, elementary transformations, integration, Taylor and Laurent series, contour integration, residues, conformal mapping. (*fall, even years*)

**600-616 Orthogonal Functions and Partial Differential Equations, 3 cr.**

Fourier series, Fourier transform; orthogonal functions; Legendre and other polynomial systems; Bessel functions; characteristic functions and values; Green's function; wave equation in one and more dimensions; D'Alembert's solution; Dirichlet problem; strings and membranes; heat flow; electricity flow. (*fall, even years*)

**600-665 Business and Industrial Statistics, 4 cr.**

Statistical methods commonly applied in business and industry: quality control, control charts and acceptance sampling; multiple regression, time series, smoothing and forecasting; index numbers. (*fall, odd years*)

**778-516 American Legislative Process, 3 cr.**

Legislative institutions and policies, emphasizing the U.S. Congress. The role of legislatures in American politics; elections, representation, formal and informal legislative institutions and practices, leadership, interest groups and lobbying, and the role of legislatures in policy innovation. (*spring, odd years*)

**778-610 Intergovernmental Relations, 3 cr.**

The relations among the federal, state and local units of government; federalism, intergovernmental revenues and expenditures, intergovernmental policies and grants-in-aid. (*fall, odd years*)

**835-506 Regulatory Policy and Administration, 3 cr.**

The origins, purposes and operation of regulatory agencies and the programs in the U.S.: theories of regulation, issues and controversies in regulatory policy, and decision-making in such areas as economic regulation, public health, consumer protection, workplace safety and environmental quality. (*fall, odd years*)

**835-522 Environmental Planning, 3 cr.**

The concept of planning, the history of its use in the development of regions, and the present status of planning in the United States, with some international comparisons. (*fall*)

**835-576 Administrative Law, 3 cr.**

Administrative law in the American federal (intergovernmental) system: fundamentals of administrative law; connections between administrative law issues and issues of public policy; and legal dimensions of administrative problems. *(spring, even years)*

**835-578 Environmental Law, 3 cr.**

An overview of major environmental laws, including their historical development, structure and implementation by federal, state and local agencies. *(fall)*

**835-602 Environmental and Resource Economics, 3 cr.**

Applications of tools and concepts in current economic decision making, with special emphasis upon common property resources management. *(spring)*

**835-606 State and Local Government, 3 cr.**

The structure and operation of state and local governments and their administration of public policies and programs; emphasizes issues of importance to each level, the interaction between levels, and Wisconsin as a case study. *(spring)*

**835-608 Public Policy Analysis, 3 cr.**

An introduction to public policy analysis and to the policy-making process, primarily in American government. Political aspects of policy analysis, models and methods for rational design of public policies, applications of policy studies to particular public problems. *(fall)*

**835-615 Public and Nonprofit Budgeting, 3 cr.**

The purposes and attributes of major public budgetary systems: principles and methods in designing and managing relationships among program planning, policy planning and budgetary operations; applications of analytical and decision-assisting tools in public budgetary operations. *(spring)*

**835-620 Health Care Policy and Administration, 3 cr.**

Examines contemporary health care problems in the United States, emerging controversies in public policy, and challenges to effective health care management. Exercises and projects acquaint students with strategies for dealing with major health care issues. P: 950-202 or 950-201. *(spring, even years)*

**835-621 Techniques and Methods of Planning Analysis, 3 cr.**

The application of basic tools for urban and regional planning; sources of quantitative data and other information; techniques and methods of analysis of population, economics, land use, housing and transportation. *(spring)*

**835-651 Decision Theory and Methods, 3 cr.**

Quantitative and qualitative dimensions of decision-making; usefulness of various theories and methods of making decisions in individual, group, organizational and policy-making contexts. *(fall)*

**835-652 Planning Theory and Methods, 3 cr.**

Planning for public and not-for-profit agencies: theory and practical significance of planning; the political and administrative setting of planning operations; and methods of planning analysis such as strategic planning. *(spring)*

**835-653 Cost-Benefit Analysis, 3 cr.**

Intensive analysis of procedures involved and conceptual basis of project evaluation from both public and private sector viewpoints. Hands-on experience is gained through worksheets and student projects.

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**Undergraduate Courses  
(300-400 Level)**

Graduate credit for undergraduate courses with 300 or 400 level numbers is available only with special permission of the instructor and the student's graduate adviser or the associate dean of graduate studies. An assigned study card is required for registration in one of these courses under either the XXX-596 or XXX-696 number.

# ■ Business Administration (M.B.A.)

## A Cooperative Program with the University of Wisconsin-Oshkosh

The UW-Oshkosh M.B.A. is a cooperative program offered at UWGB. The M.B.A. degree is awarded by UW-Oshkosh which is accredited by the American Assembly of Collegiate Schools of Business. It is specifically designed to provide individuals in both the public and private sectors with professional managerial training.

## Basic Requirements

The M.B.A. program consists of three structured levels of courses:

- Foundations
- Management core
- Electives

General requirements consist of 30 graduate credits in the core and elective courses with foundation course work taken as needed, depending on previous undergraduate training. All M.B.A. courses are evening courses given by UW-Oshkosh on the UWGB campus.

M.B.A. candidates must maintain at least a 3.0 grade point average in all course work with no more than two Cs. The maximum time allowed to complete the degree is seven years from the date of starting the first degree course. Foundation courses are not included in the seven-year time limit.

For more detailed information regarding admission criteria, program requirements and enrollment procedures contact:

Prof. Donald R. Simons  
Associate Dean and Director of  
M.B.A. Program  
College of Business Administration  
University of Wisconsin-Oshkosh  
Oshkosh, WI 54901  
414-424-1436  
1-800-633-1430

## ■ Foundations

Foundation-level courses are designed to provide the necessary academic background for graduate study in business. The courses may be waived if the student has completed equivalent course work in previous academic studies. A number of UWGB courses may serve as the equivalent of foundation courses. (For descriptions of UWGB courses, see the undergraduate catalog.)

UWO 28-700 Accounting Foundations, 3 cr.  
OR

UWGB 107-300 Introductory Accounting,  
3 cr.

AND

UWGB 107-302 Accounting for  
Administrators, 3 cr.

UWO 28-710 Management and the  
Computer, 3 cr.

OR

UWGB 266-155 Computers and  
Microcomputers, 3 cr.

UWO 28-711 Foundations of Mathematics,  
3 cr.

OR

UWGB 600-201 Calculus for the Manage-  
ment and Social Sciences, 3 cr.

UWO 28-712 Foundations of Statistics, 3 cr.  
OR

UWGB 600-260 Introductory Statistics, 3 cr.

UWO 28-730 Finance Foundations, 3 cr.  
OR

UWGB 216-343 Corporation Finance, 3 cr.

UWO 28-740 Foundations of Production  
Management, 3 cr.

OR

UWGB 216-384 Industrial Management, 3 cr.

UWO 28-750 Management Foundations, 3 cr.

OR

UWGB 216-382 Introductory Management,  
3 cr.

UWO 28-770 Marketing Foundations, 3 cr.

OR

UWGB 216-322 Introductory Marketing, 3 cr.

UWO 36-704 Basic Economic Theory, 3 cr.

OR

UWGB 298-202 Micro Economic Analysis,  
3 cr.

AND

UWGB 298-203 Macro Economic Analysis,  
3 cr.

### ■ **Management Core**

All core courses are required for the M.B.A. degree (total 21 credits).

UWO 28-731 Financial Management, 3 cr.

UWO 28-751 Organization Theory, 3 cr.

UWO 28-752 Managerial Accounting, 3 cr.

UWO 28-753 Quantitative Methods, 3 cr.

UWO 28-754 Information Systems  
Integration, 1.5 cr.

UWO 28-756 Organizations and Their  
Environments, 3 cr.

UWO 28-757 Corporate Strategy, 1.5 cr.

UWO 28-771 Marketing Management, 3 cr.

### ■ **Electives**

Students are required to complete at least nine credit hours selected from the following courses:

UWO 28-694 International Study Tour, 3 cr.

UWO 28-701 Topics of Enterprise Reporting,  
3 cr.

UWO 28-702 Cost Analysis and Control, 3 cr.

UWO 28-703 Strategy of Tax Management,  
3 cr.

UWO 28-704 Accounting Information  
Systems, 3 cr.

UWO 28-720 Legal Aspects of Business, 3 cr.

UWO 28-722 Planning for Management in  
the Future, 3 cr.

UWO 28-732 Investment Analysis and  
Portfolio Management, 3 cr.

UWO 28-733 Money and Capital Markets,  
3 cr.

UWO 28-734 International Financial  
Management, 3 cr.

UWO 28-741 Productivity and Quality  
Management, 3 cr.

UWO 28-742 Quantitative Analysis in  
Production Management, 3 cr.

UWO 28-743 Topics in Operations  
Management, 3 cr.

UWO 28-761 Human Resources  
Development, 3 cr.

UWO 28-762 Organizational Reward  
Systems, 3 cr.

UWO 28-763 Collective Bargaining Systems,  
3 cr.

UWO 28-765 Venture Management, 3 cr.

UWO 28-769 Seminar in Management Topics  
Theory, 3 cr.

UWO 28-772 Research for Marketing  
Decisions, 3 cr.

UWO 28-773 International Marketing, 3 cr.

UWO 28-777 Consumer Behavior, 3 cr.

UWO 28-783 Seminar in Information  
Systems, 3 cr.

UWO 28-784 Decision Support Systems, 3 cr.

UWO 28-796 Independent Study, 1-3 cr.

# Education Programs

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## **Cooperative Programs with the University of Wisconsin-Milwaukee and the University of Wisconsin-Oshkosh**

Through a series of cooperative arrangements between the University of Wisconsin-Green Bay and its sister campuses, UW-Milwaukee and UW-Oshkosh, four graduate programs in education may be completed at the UW-Green Bay campus. These are:

- Master of Science in Administrative Leadership and Supervision in Education with an Emphasis on Educational Administration and Supervision (UW-Milwaukee)
- Master of Science in Curriculum and Instruction (UW-Milwaukee)
- Master of Science in Educational Psychology with a Concentration in Counseling (UW-Milwaukee)
- Master of Science in Education—Reading (UW-Oshkosh)

These programs offer a coordinated set of UWGB and UW-Milwaukee or UW-Oshkosh courses to enable students to complete requirements for these degrees on the UWGB campus. Students must be admitted to the graduate school and appropriate department of the degree-granting campus (UW-Milwaukee or UW-Oshkosh) and are subject to the rules and regulations of that campus. Students who satisfactorily complete degree requirements will receive the appropriate degree from the sponsoring campus and be recommended for any appropriate licensure associated with the degree by that campus.

Students in these cooperative programs normally will include 12 UWGB credits in their programs of study. Lists of appropriate UWGB courses and a projected schedule of offerings appear in this chapter. For information about course selection, students should

contact Prof. Thomas Van Koevering, coordinator of cooperative programs in education at UWGB at (414) 465-2297 or 2137.

### **Application for Admission and Program Information**

Packets including further information on these programs and application forms for admission to the sponsoring campus graduate schools and departments are available from:

Education Office, Wood Hall 416  
University of Wisconsin-Green Bay  
2420 Nicolet Drive  
Green Bay, WI 54311-7001

Also, for more complete descriptions of the programs, courses, degree requirements, rules and regulations and other pertinent information, students should consult the appropriate sponsoring campus graduate catalog, which may be obtained from the UWGB Education Office or by contacting the graduate school of the sponsoring campus.

### **Registration**

Registration for UW-Milwaukee or UW-Oshkosh courses may be completed by mail using forms available from the University of Wisconsin-Green Bay Education Office. Students register for the UWGB courses in their programs as graduate special students, indicated by a special classification code. Registration may be completed on campus or by mail. Early registration is encouraged.

### **Fees**

Students pay fees to the campus offering the courses in accordance with the fee schedule and procedures of that campus.

## **Administrative Leadership and Supervision Degree**

Master of Science in Administrative Leadership and Supervision in Education with an Emphasis on Educational Administration and Supervision

### **■ Degree Requirements**

The program consists of 33 total credits for the principal licensure and an additional 21 credits for district administrator.

#### **UW-Green Bay Courses (12 credits)**

- UWGB 006-780 Foundations of Curriculum, 3 cr.
- UWGB 006-XXX Supervising Instructional Personnel, 3 cr.
- UWGB 006-XXX Political Context of Schools, 3 cr.

Elective as approved by adviser, 3 cr.

#### **UW-Milwaukee Courses Taught on the UWGB Campus (21 credits)**

- UWM 103-702 Educational Administration: Theory and Practice, 3 cr.
- UWM 103-710 Organizational Change and Group Leadership, 3 cr.
- UWM 103-752 Legal Aspects of Educational Administration, 3 cr.
- UWM 103-762 Introduction to School Finance and Budgeting, 3 cr.
- UWM 103-772 Seminar in Principalship, 3 cr.
- UWM 103-782 Principalship Field Practicum, 3 cr.

Elective as approved by adviser, 3 cr.

#### **District Administrator License**

(requires completion of MSE—Administrative Leadership, Principal, plus the following 27 credits)

- UWM 103-802 The School Superintendency, 3 cr.
- UWM 103-812 School Personnel Supervision and Administration, 3 cr.
- UWM 103-832 Educational Politics and Policy Making, 3 cr.
- UWM 103-842 Program Planning and Evaluation in Education, 3 cr.
- UWM 103-852 Collective Bargaining and Contract Administration in Education, 3 cr.

UWM 103-862 Economics of Education, 3 cr.

UWM 103-882 Practicum in School Superintendency, 3 cr.

UWM 103-892 Applied Field Study Project, 3 cr.

### **Comprehensive Examination**

Students must pass a final comprehensive examination.

### **Time Limit**

A student must complete all requirements for the degree within seven years of the initial enrollment.

### **■ Licensure Opportunities**

Upon satisfactory completion of this program, persons who are eligible for a Wisconsin teaching license and have the required teaching experience may qualify for a license as an elementary or secondary school administrator and/or district administrator.

### **■ Projected Schedule of Courses Fall 1993-Summer 1996**

All courses are offered at the UWGB campus.

#### **Fall 1993**

- UWGB 006-786 Current Issues and Trends in Education, 3 cr. (elective)
- UWM 103-702 Educational Administration: Theory and Practice, 3 cr.
- UWM 103-862 Economics of Education, 3 cr.
- UWM 103-882 Practicum in School Superintendency, 3 cr.

#### **Spring 1994**

- UWGB 006-XXX Political Context of Schools, 3 cr. (tentative offering)
- UWM 103-852 Collective Bargaining and Contract Administration in Education, 3 cr.
- UWM 103-882 Practicum in School Superintendency, 3 cr.
- UWGB Elective

#### **Summer 1994**

- UWGB 006-XXX Organizational Change and Group Leadership, 3 cr.
- UWGB 006-XXX Supervising Instructional Personnel, 3 cr. (tentative offering)
- UWM 103-702 Educational Administration: Theory and Practice, 3 cr.

UWM 103-812 School Personnel Supervision and Administration, 3 cr.

UWM 103-842 Program Planning and Evaluation in Education, 3 cr.

UWM 103-882 Practicum in School Superintendency, 3 cr.

UWGB Elective

#### Fall 1994

UWM 103-752 Legal Aspects of Educational Administration, 3 cr.

UWM 103-832 Educational Politics and Policy Making, 3 cr.

UWM 103-882 Practicum in School Superintendency, 3 cr.

UWGB Elective

#### Spring 1995

UWGB 006-XXX Political Context of Schools, 3 cr.

UWM 103-882 Practicum in School Superintendency, 3 cr.

UWM 103-892 Applied Field Study Project, 3 cr.

#### Summer 1995

UWM 103-772 Seminar in Principalship, 3 cr.

UWGB Elective

UWM Elective

#### Fall 1995

UWGB 302-652 Principles of Middle-Level Education, 3 cr.

UWM 103-782 Principalship Field Practicum, 3 cr.

UWM 103-882 Practicum in School Superintendency, 3 cr.

#### Spring 1996

UWGB Elective

#### Summer 1996

UWM 103-762 Introduction to School Finance and Budgeting, 3 cr.

UWM 103-802 The School Superintendency, 3 cr.

UWGB Elective

## Curriculum and Instruction Degree

Master of Science in Curriculum and Instruction

### ■ Degree Requirements

The degree program consists of 33 credits.

#### UW-Green Bay Courses (12 credits)

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWGB 006-785 Curriculum and Instruction as a Field of Inquiry, 3 cr.

Electives as approved by adviser, 6 cr. (Not more than three credits may be in 006-795 courses.)

UWGB Electives:

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr.

UWGB 302-620 Workshop in Economics Education, 3 cr.

UWGB 006-709 Effective Schools, 3 cr.

UWGB 006-781 School Profiling for Site-Based Management, 3 cr.

#### UW-Milwaukee Courses Taught on the UWGB Campus (21 credits)

UWM 272-714 Analysis of Instruction, 3 cr.

UWM 272-716 Urban Education: Teaching, 3 cr.

UWM 272-800 Master's Seminar in Curriculum and Instruction, 3 cr.

UWM 272-819 Theory and Design of Curriculum, 3 cr.

Electives as approved by adviser, nine credits, at least six of which must be in Curriculum and Instruction courses, including:

UWM 272-544 Teaching of Reading and Writing in the Elementary Grades (Whole Language), 3 cr.

#### Comprehensive Examination

Neither a final written nor an oral comprehensive examination is required. Students must demonstrate their proficiency through satisfactory completion of the Master's Seminar in Curriculum and Instruction (272-800).

#### Time Limit

Students must complete all degree requirements within five years of initial enrollment.

### ■ **Licensure Opportunities**

Through selection of appropriate elective courses, persons who are eligible for a Wisconsin teaching license and have the required teaching experience may qualify for a license as an elementary or secondary supervisor.

### ■ **Projected Schedule of Courses Fall 1993-Summer 1996**

#### **Fall 1993**

UWGB 006-786 Current Issues and Trends in Education, 3 cr. (elective)

UWM 272-544 Improving the Teaching of Reading: Portfolio Assessment-Reader's and Writer's Workshop, 3 cr. (elective)

#### **Spring 1994**

UWM 272-819 Theory and Design of Curriculum, 3 cr.

UWGB Elective

#### **Summer 1994**

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWM 272-714 Analysis of Instruction, 3 cr.

#### **Fall 1994**

UWM 272-716 Urban Education: Teaching, 3 cr.

UWGB Elective

#### **Spring 1995**

UWGB 006-785 Curriculum and Instruction as a Field of Inquiry, 3 cr.

UWM Elective

UWM 272-800 Seminar in Curriculum and Instruction, 3 cr.

#### **Summer 1995**

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWM Elective

#### **Fall 1995**

UWGB 006-786 Current Issues and Trends in Education, 3 cr. (elective)

UWM 272-819 Theory and Design of Curriculum, 3 cr.

#### **Spring 1996**

UWM Elective

UWGB Elective

#### **Summer 1996**

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWM Elective

### **Educational Psychology— Counseling Degree**

Master of Science in Educational Psychology with a Concentration in Counseling

### ■ **Degree Requirements**

The degree program consists of 39 credits.

#### **UW-Green Bay Courses (12 credits)**

UWGB 006-750 Statistical Methods Applied to Education, 3 cr.

UWGB 481-620 Tests and Measurements, 3 cr. (P: course in statistics)

Electives as approved by adviser, 6 cr.

For licensure in school counseling, electives must include UWGB 302-610 Introduction to the Education of Exceptional Children, unless the course has been taken for undergraduate credit.

#### **UW-Milwaukee Courses Taught on the UWGB Campus (27 credits)**

UWM 265-710 Counseling: Theory and Issues, 3 cr.

UWM 265-711 Foundations of Career Development, 3 cr.

UWM 265-714 Essentials of Counseling Practice, 3 cr.

UWM 265-715 Multicultural Counseling, 3 cr. (P: 265-714)

UWM 265-774 Fieldwork in Counseling, 3 cr. (P: 265-710 and 265-714)

UWM 265-800 Group Counseling Theory, 3 cr. (P: 265-710 and 265-714)

UWM 265-970 Supervised Practicum in Counseling (P: 265-710, 265-714 and 265-744)

UWM 315-640 Human Development: Theory and Research, 3 cr.

One of the three following courses depending upon concentration:

UWM 265-810 Developmental Counseling in the Elementary School, 3 cr. (P: 265-710 and 265-714)



UWM 265-811 Counseling in the Secondary School, 3 cr. (P: 265-710 and 265-714)

UWM 265-900 Clinical Studies in Counseling, 3 cr. (P: 265-710 and 265-714)

### **Comprehensive Examination**

The student must pass a final oral or written comprehensive examination.

### **Time Limit**

The student must complete all degree requirements within five years of initial enrollment.

### **■ Licensure Opportunities**

Upon satisfactory completion of this program, persons who are eligible for a Wisconsin teaching license and have the required teaching experience may qualify for a license as a counselor at the elementary or secondary school level.

### **■ Projected Schedule of Courses**

#### **Fall 1993-Spring 1996**

Cycle of courses begins fall 1993.

#### **Fall 1993**

UWGB 006-750 Statistical Methods Applied to Education, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWM 265-710 Counseling: Theory and Issues, 3 cr.

#### **Spring 1994**

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWGB 481-620 Tests and Measurements, 3 cr.

UWM 265-714 Essentials of Counseling Practice, 3 cr.

#### **Summer 1994**

UWGB 006-780 Foundations of Curriculum, 3 cr. (elective)

UWM 265-711 Foundations of Career Development, 3 cr.

UWM 265-715 Multicultural Counseling, 3 cr.

#### **Fall 1994**

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWM 265-774 Fieldwork in Counseling, 3 cr.

#### **Spring 1995**

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWGB 481-620 Tests and Measurements, 3 cr.

UWM 265-800 Group Counseling Theory, 3 cr.

UWM 315-640 Human Development: Theory and Research, 3 cr.

#### **Summer 1995**

UWGB 006-780 Foundations of Curriculum, 3 cr. (elective)

UWM 265-810 Developmental Counseling in the Elementary School, 3 cr.

UWM 265-811 Counseling in the Secondary School, 3 cr.

#### **Fall 1995**

UWGB 006-750 Statistical Methods Applied to Education, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWM 265-812 Clinical Studies in Counseling, 3 cr.

#### **Spring 1996**

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr. (elective)

UWM 265-970 Supervised Practicum in Counseling, 3 cr.

## **Reading Degree**

Master of Science in Education—Reading

### **■ Degree Requirements**

The degree program consists of 30 or 36 credits.

Prerequisites: Applicants must hold and be eligible for teacher licensure and should have taken:

## Education Programs

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UWO The Learning Disabled Child, 3 cr.

OR

UWGB 006-610 Introduction to the Education of Exceptional Children, 3 cr.\*

UWGB 302-508 Children's Literature in the Elementary School, 3 cr.

OR

UWGB 302-519 Adolescent Literature in Middle and Secondary School Reading, 3 cr.\*

If these have not been taken as recent courses, they must be completed either as undergraduate courses or as graduate elective credits within the program.

### **UW-Green Bay Courses (12 credits)**

UWGB 006-705 Reading in the Elementary School, 3 cr.\*

(equivalent to UWO 15-705)

UWGB 006-765 Diagnosis of Reading Difficulties, 3 cr.\*

(equivalent to UWO 15-765)

Electives, 6 cr. (to include 302-610 and 302-508/519 if these have not already been taken)

### **UW-Oshkosh Courses Taught on the UWGB Campus (18-24 credits)**

UWO 15-735 Reading in the Secondary School, 3 cr.\*

UWO 15-720 Corrective Reading Clinic, 3 cr.\*

UWO 12-770 Foundations of Educational Research, 3 cr.

UWO 15-780 Administration and Supervision of Reading Programs, 3 cr.

UWO 15-785 Practicum in Reading, 3 cr.

Research options and electives as specified in Option 1 or 2 below:

Option 1: UWO 15-795 Thesis, 3-6 cr.

Option 2: UWO 15-790 Seminar in Reading Research, 3 cr.

UWO electives, 6 cr.

### **Credit Requirements**

Thirty credits applicable to the degree constitute the minimum requirements for students in Option 1 (thesis plan) in the MSE—Reading

\*Required for Reading Teacher-316 license (Completion of the MSE—Reading is required for Reading Specialist-317 license.)

Program. In Option 2, the student is required to take 36 credits and complete a major paper developed in the seminar in reading research.

### **Comprehensive Examination**

Candidates in Option 1 orally defend their theses to faculty committees in open meetings. Those in Option 2 must successfully complete a written comprehensive examination.

### **Time Limit**

All work applied toward the degree must be completed within a seven-year time period.

### **■ Licensure Opportunities**

1. To be recommended for 316 (reading teacher) licensure, the student must be enrolled in a graduate program and complete the 18 credits above marked with an asterisk.

2. To be recommended for 317 (reading specialist) licensure, the student must complete the MSE—Reading degree.

3. At least 12 of the required credits for licensure, including 15-720, must be taken at UW-Oshkosh or at UWGB in the UW-Oshkosh-UWGB MSE—Reading Cooperative Program.

4. A minimum of two years of teaching experience is required by the Department of Public Instruction for 316 and 317 licensure.

### **■ Projected Schedule of Courses Fall 1993-Summer 1995**

#### **Fall 1993**

UWGB 006-786 Curriculum Issues and Trends in Education, 3 cr.

UWGB 302-508 Children's Literature in the Elementary School, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr.

UWGB 481-631 Cognitive Development, 3 cr.

UWO 12-770 Foundations of Educational Research, 3 cr.

UWO 15-780 Administration and Supervision of Reading Programs, 3 cr.

UWO 15-785 Practicum in Reading, 3 cr.

#### **Spring 1994**

UWGB 006-765 Diagnosis of Reading Difficulties, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr.

UWGB 302-621 Literacy and Language Development in Young Children, 3 cr.

UWO 15-735 Seminar in Secondary School Reading, 3 cr.

#### Summer 1994

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWGB 302-622 Reading in the Content Areas, 3 cr.

UWO 15-720 Corrective Reading Clinic, 3 cr.

#### Fall 1994

UWGB 302-508 Children's Literature in the Elementary School, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr.

UWGB 481-631 Cognitive Development, 3 cr.

UWO 15-782 Problems in the Evaluation of Reading, 3 cr.

UWO 16-554 The Learning Disabled Child, 3 cr.

#### Spring 1995

UWGB 302-519 Adolescent Literature in Middle and Secondary School Reading, 3 cr.

UWGB 302-610 Introduction to the Education of Exceptional Children, 3 cr.

UWGB 302-621 Literacy and Language Development in Young Children, 3 cr.

UWO 15-790 Seminar in Reading Research, 3 cr.

#### Summer 1995

UWGB 006-705 Reading in the Elementary School, 3 cr.

UWGB 006-780 Foundations of Curriculum, 3 cr.

UWGB 302-615 Counseling Role of the Classroom Teacher, 3 cr.

UWO 15-792 Theoretical Foundations of Reading, 3 cr.

## Faculty

**Bryan, Dennis L.**, Associate Professor, Education (Curriculum). B.S. (1960), M.S. (1962) Western Michigan; Ed.D. (1972) Michigan State.

Site-based management. Effective schools. School profiling. Curriculum development and evaluation.

**Gushwa, Prudence J.**, Director of School Services Bureau. B.A. (1964) University of Hawaii; M.A. (1972), Ed.S. (1978) Mankato State University; Ph.D. (1985) University of Minnesota.

Educational administration: human resources/personnel, supervision, school law, leadership, site-based decision making.

**Hughes, Fergus**, Associate Professor, Human Development. B.A. (1968) St. Johns University; M.A. (1972), Ph.D. (1972) Syracuse.

Life span human development, child and adolescent psychology.

**Laughlin, Margaret A.**, Chairperson and Professor, Education (Social Sciences). B.A. (1959), M.A. (1964) California State-Sacramento; Ed.D. (1978) Southern California.

Social studies, economic, and geography education K-12. International/comparative education. Global/multicultural education. Curriculum. Foundations. Research.

**O'Hearn, George T.**, Professor, Education (Physics). B.A. (1957), M.S. (1960), Ph.D. (1964) UW-Madison.

Research design, program evaluation. International comparative education. Science curriculum development, teaching, methods and effectiveness. Scientific literacy—the cultural impact of science.

**Presnell, Richard W.**, Associate Professor, Education. B.A. (1958), M.A. (1961) Iowa; Ph.D. (1971) Cornell.

Environmental education in elementary and secondary schools. Problem-solving education. Ecological education and outdoor environmental education processes.

**Sewall, Timothy J.**, Assistant Professor, Human Development. B.S. (1974) UW-Green Bay; M.Ed. (1975) James Madison Univer-

sity; Ph.D. (1988) UW-Madison.

Tests and measurement techniques, program evaluation and survey research methods. Counseling and intervention techniques with children, adolescents and adults. Learning-style characteristics and the adult learner.

**Simmons, Joan**, Instructor, Education (Reading). A.B. (1968), M.S. (1973), A.B.D. (1991) Indiana University.

Secondary, middle, and elementary reading. Reading in the content areas. Learning disabilities. Severe emotional handicaps. Mildly mentally retarded. Cooperative learning. Reading diagnosis and assessment.

**Spielmann, Daniel**, Lecturer, Business Administration and Special Assistant to the Chancellor. B.A. (1972), J.D. (1974) UW-Madison.

School law.

**Thompson, Philip E.**, Associate Professor, Education (English). B.A. (1958) Beloit; M.S. (1962) UW-Madison; Ph.D. (1972) Illinois.

English, language arts and aesthetics education. Multicultural education. Composition assessment. Foundations of curriculum.

**Thron, Joan**, Lecturer, Education. B.S. (1959) Emory; M.A. (1973) UW-Madison.

Children's literature, composition theory and practice. Instructional media and the role of computers. Multicultural materials.

**Tompkins, Francine M.**, Assistant Professor, Education (Special Education). B.A. (1972), M.A. (1979), Ph.D. (1989) Michigan State.

Education of exceptional needs students. Educational psychology. Educational collaboration.

**Van Koevering, Thomas E.**, Professor, Education (Science Education, Chemistry). B.S. (1962) Western Michigan; M.A. (1965) Michigan; Ph.D. (1969) Western Michigan.

Science and science education, emphasis on elementary and secondary school. In-service science enrichment courses for teachers. Science motivation and international science education.

## UWGB

### Course Descriptions

In the course descriptions in this catalog, commonly used abbreviations include:

cr	credits
P	prerequisite course or experience
Rec	recommended course or experience
gr st	graduate standing
fr	freshman
soph	sophomore
jr	junior
sr	senior
cons inst	consent of instructor

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### Graduate-Only Courses (700-Level)

#### 006-702 Business Administration of School Systems, 3 cr.

Business functions and related support systems of American elementary and secondary public schools; budgeting procedures and financial reporting studies are based on relevant Wisconsin Statutes and Department of Public Instruction requirements.

#### 006-705 Reading in the Elementary School, 3 cr.

Consideration of components of a developmental reading program for the elementary school including the role of language in reading, basic reading skills and attitudes, methods and materials, individualization of instruction, and evaluation.

#### 006-706 The Administrator and the Community, 3 cr.

The relationship of schools and communities in American society; relationships between schools and communities, public participation in local school districts, and response of local school districts to changing demands. Emphasis is on the school administrator and citizens at the local level. P: gr st and teaching experience or cons inst. Rec: UWM 103-705.

#### 006-709 Effective Schools, 3 cr.

An in-depth review and analysis of the growing body of educational research literature that identifies elements and conditions present in effective schools. Participants develop ways of assessing the extent to which these elements are present in schools and explore implications for school practices.

**006-710 Practicum in Effective Instructional Skills, 2 cr.**

For teachers and supervisors currently involved in schools: analysis and application of effective teaching concepts and skills, including teacher demonstrations and simulations. P: gr st, must be currently involved in teaching.

**006-715 Workshop in Middle Education Program Development, 2-3 cr.**

Selected topics for the professional educator in curriculum, instructional procedures, and evaluation of middle level program development. Current issues, philosophical trends, and rationale are discussed. Variable content; may be repeated for credit with different topics.

**006-730 Issues and Trends for Educating Students With Exceptional Needs (EEN), 3 cr.**

Relevant issues and practices which impact the education of students with exceptional needs including gifted and talented, handicapped, and at-risk populations. P: 302-410 or 302-610; gr st.

**006-750 Statistical Methods Applied to Education, 3 cr.**

Types of measures, data organization and display, measures of central tendency, variability, location, and correlation, hypothesis testing and interval estimation for common statistics in one and two sample cases. Introduction to analysis of variance and chi-square.

**006-765 Diagnosis of Reading Difficulties, 3 cr.**

Comprehensive and accurate diagnosis of moderate to severe reading disabilities and associated learning, language, or behavior disorders through the use of formal and informal instruments. Students complete an intensive diagnosis of a student's reading ability, a comprehensive report specifying the results of the evaluation, and a prescription for future remediation of reading problems.

**006-772 Contemporary Educational Thought, 3 cr.**

Current thinking of educators, critics, social scientists, philosophers, and others as related to schools and schooling: topics, problems, controversies and issues related to education at the local, national, and international level. P: gr st, experience in professional education, teacher certification, and cons inst.

**006-780 Foundations of Curriculum, 3 cr.**

Philosophical, sociological, historic and psychological underpinnings of curriculum design, development and evaluation for the experienced elementary, secondary and VTAE educator. Examines forces influencing curriculum development and identifies issues related to curriculum design and development. P: gr st and experience with elementary, secondary, or VTAE education.

**006-781 School Profiling for Site-Based Management, 3 cr.**

Teachers and principals will learn to gather, summarize, and analyze data related to important building-level educational outcomes. Outcomes in the areas of student achievement, social behaviors, and parent, staff, and student attitudes will be measured and analyzed. The course facilitates school improvement at the building level through data-driven decision making.

**006-783X Experimental Courses**

Courses and seminars may be offered by graduate faculty in response to special demand or on an experimental basis. Topics may address current issues of general concern, special interests of students or faculty, or special resources of visiting faculty. The title of the special topics course as announced in the *Time-table* will appear on the transcripts of students who enroll. Credits earned in the 783X special topics courses may not be applied toward the graduate core requirement. P: gr st.

**006-785 Curriculum and Instruction as a Field of Inquiry, 3 cr.**

An inquiry approach to the content of curriculum and instruction: develops skills in interpreting and using research and provides a framework related to origin, development, and basis of curriculum and instruction.

**006-786 Current Issues and Trends in Education, 3 cr.**

This class critically examines and evaluates recent educational innovations, differing educational viewpoints, and alternative educational trends. Particular attention is focused on educational practices for the future. P: gr st or cons inst.

**006-788 The Teacher and the Law, 3 cr.**

Concerns of teachers relating to tenure, non-renewals, due process, free speech, student rights, and potential liability; administration of collective bargaining in education; brief

introduction to statutory regulation and financing of school systems. Emphasis on Wisconsin. P: gr st and teacher certification or cons inst.

**006-795 Special Topics in the Education Environment, 1-3 cr.**

A course offered by graduate faculty in response to a special need and which is not intended to become a regular part of the graduate curriculum. The title of the specific topic is announced in the *Timetable* and is entered on the transcript of students who enroll. This course may be repeated with a change in topic. Subject to adviser's approval, three credits may be applied to meet UWGB credit requirements in a cooperative program with the possibility of a maximum of three additional credits upon petition.

**006-798 Independent Study, 1-3 cr.**

Reading and research under the supervision of a member of the graduate faculty. Independent study credits may only be earned when included as part of an approved program plan. P: student classification of MSC6, MSA6, MSE6 or higher.

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**Undergraduate/Graduate Courses  
(500-699 Level)**

**246-520 History of the English Language, 3 cr.**

The origins, development, and cultural background of the English language; evolution of pronunciation and spelling, grammar, vocabulary, meaning and usage in Old, Middle, and Modern English, including contemporary English dialects.

**246-522 Modern Linguistics, 3 cr.**

Structure and system in language, with attention to modern English and including principles of structural, computational, and generative-transformational linguistics.

**302-508 Children's Literature in the Elementary School, 3 cr.**

Effective children's literature programs; analyzing children's books; developing instructional units and independent programs to foster positive attitudes toward reading; books for personal development, for developing attitudes about social issues; criteria for evaluating content, methods and effectiveness.

**302-515 Teaching English as a Second Language, 3 cr.**

Basic methods of teaching English to non-native speakers and the underlying theories from linguistics, psychology, education and sociolinguistics; development and evaluation of lessons for the ESL classroom.

**302-519 Adolescent Literature in Middle and Secondary School Reading, 3 cr.**

Design and content of effective adolescent literature programs; analysis and evaluation of adolescent literature; current practices in literacy curricula; adolescent literature and personal development; literature and social issues.

**302-606 Evaluation and Testing in Education, 2-3 cr.**

Techniques for constructing tests and measurement systems; statistical procedures applied to classroom data; monitoring and assessing individual and group learning situations; using and interpreting data from standardized tests.

**302-610 Introduction to the Education of Exceptional Children, 3 cr.**

Survey of the kinds of exceptionalities, their needs and some methods for meeting them; recognition and understanding of exceptional children and unique subtleties that deserve specific attention.

**302-620 Workshop in Economics Education, 2-3 cr.**

Provides background on selected current economic topics and concepts; examines new print and nonprint instructional materials and curriculum guides in economic education; supports development of learning activities appropriate to students' instructional responsibilities.

**302-621 Literacy and Language Development in Young Children, 3 cr.**

Acquisition of reading skills and development of language in preschool through primary grades; analysis of instructional and diagnostic strategies for listening and reading comprehension, vocabulary development, word identification strategies and approaches to beginning reading.

**302-622 Reading in the Content Areas, 3 cr.**

Practical guidelines for classroom teachers in subject areas—English, social studies, mathematics, science, etc.; suggestions for teaching reading and study skills related to content.

specialized and technical vocabulary, developing study guides; dealing effectively with reading problems in the content areas.

**302-652 Principles of Middle-Level Education, 3 cr.**

Provides an introductory understanding of the philosophy and organization of middle-level education. Emphasis is directed toward programmatic considerations. P: gr 8 st and experience in education.

**302-662 The Adult Learner, 3 cr.**

Various physiological, psychological and sociological factors relevant to adult development and their implications for learning; key elements in the teaching-learning process for adults; survey of research in adult learning.

**481-620 Tests and Measurements, 3 cr.**

Methods and problems of measuring human characteristics, including determination of validity, reliability, and interpretive schemas for such measures. Examination of selected tests in intelligence, achievement, attitudes, interests, and personality. Typical uses of tests and methods or reviewing tests. P: a course in statistics.

**481-631 Cognitive Development, 3 cr.**

Development of cognitive functioning from infancy to adulthood: analysis of intellectual development from the major contemporary perspectives of information processing, Piagetian psychology, and behaviorism.

**481-636 Counseling with Children and Adolescents, 3 cr.**

Theories and principles of counseling as applied to children and adolescents: surveys different theoretical approaches and techniques for helping children and adolescents cope with developmental deviations.

**Undergraduate Courses  
(300-400 Level)**

Graduate credit for undergraduate courses with 300 or 400-level numbers is available only with special permission of the instructor and the student's graduate adviser or the associate dean of graduate studies. An assigned study card is required for registration in one of these courses, under either the XXX-596 or XXX-696 number.

# ■ Academic Rules and Regulations

## Class Attendance

A student is expected to attend all class sessions. If, for any reason, a student is unable to attend classes during the first week of classes, he or she is responsible for notifying the instructor(s), in writing, of the reason for nonattendance and intentions to complete the course. Registered students are obligated to pay all fees and penalties as listed on the fee schedule; nonattendance does not alter these academic or financial obligations in any way.

## Definitions

**Academic Suspension**—a status assigned when a student's record of academic progress and/or achievement is unacceptable. Suspended students are not permitted to continue to enroll at the University.

**Attempted or Grade Point Credits**—those graduate credits for which a letter grade of A, AB, B, BC, C, D, WF, or F has been

earned and used to calculate the grade point average.

**Credit Load**—the total of all graduate credits, undergraduate credits, and audited credits being taken in a given term.

**Good Standing**—a status assigned when a student is achieving at an adequate level (3.0 cumulative and semester GPAs).

**Grade Point Average (GPA)**—a numerical value used to express the general quality of all courses/credits completed on a regular graded basis (A, AB, B, BC, C, D, F, WF). Only attempted graduate credits taken at UWGB are computed into the graduate GPA.

**Graduate Credits**—those credits which are taken under a graduate course number (500-level or above) by a student enrolled with a graduate classification (MS, MSC, MSA, MSE, GSP, GMI, GML, GMC, GMO, GSO, GMB) and noted by a letter G after the credits on any enrollment forms and records.

## Grading System and Grade Points

Letter Grade	Grade Points Per Credit
A (Excellent)	4.0
AB (Very Good)	3.5
B (Good)	3.0
BC (Above Average)	2.5
C (Average)	2.0
D (Poor)	1.0
F (Unacceptable)	0.0
WF (Unofficial Withdrawal)	0.0
PR (Progress-temporary grade for an internship or thesis course)	No effect
P (Passed thesis or internship)	No effect
NC (Unacceptable thesis or internship)	No effect
U (Unsatisfactory audit)	No effect
S (Satisfactory audit)	No effect
N (No acceptable report from instructor—temporary grade)	No effect until an acceptable grade is submitted.
I (Incomplete)	No effect until removed or lapsed into the tentative grade assigned if the required work is not completed prior to the deadline established by the instructor, or the last day of classes for the following semester, whichever comes first.



**Graduate Record**—the permanent record of all graduate level credits attempted and grades earned, including courses which may not be completed, such as progress (PR) or incomplete (I), as well as audited graduate credits.

**Maximum Credit Load**—a specific limitation of the number of credits that a student is allowed to carry at any time during an academic term. For a graduate student in good standing, this is defined as 12 credits in a semester and for a graduate student on probation the maximum is reduced to 9 credits. For a shorter term, lower pro rata limitations are in effect.

**Minimum Credit Load**—a specific minimum number of graduate credits for which a graduate student must be enrolled in a term to be eligible for a variety of programs and benefits, such as V.A. benefits, financial aid, and assistantships.

**Probation**—an academic status assigned to a student who is achieving below minimum GPA standards required for good standing. Probation is an advisory warning that improved quality of work is necessary to continue as a student.

**Provisional Admission**—a conditional graduate admission status which is subject to review after 9 graduate credits have been attempted at UWGB.

**Undergraduate Record**—a separate permanent record of any undergraduate courses taken. A complete transcript includes copies of both the graduate and undergraduate records compiled at UWGB.

## Academic Standing

Every student is expected to maintain certain standards of academic achievement in University work. The University has established quality of work standards, as measured by semester and cumulative grade point averages.

Academic standings are reviewed at the end of each term and a revised standing is reported to every student on the final grade report issued after each academic term.

## Probation and Suspension

The University is concerned about students whose academic achievements indicate that they are unable to meet expectations of their instructors or that they are experiencing other problems that may interfere with their studies. A probation action is an advisory warning that a student should take action to improve his or her achievement. An academic suspension action is taken when the University feels that the student's academic achievement record to date indicates a need to interrupt enrolled status to reassess and reevaluate goals and plans. A student who is placed on probation or suspension status should give careful consideration to factors involved. The University encourages such students to seek assistance from counselors, graduate advisers, and course instructors.

Every student is expected to maintain at least a B average (3.0 GPA) on all graduate work carried, whether passed or not. Failure to achieve this minimum B average in any term results in a probation, continued probation, or academic suspension action at the end of that term, as shown below. Academic suspension actions are taken at the end of each term.

### 1. Student in Good Standing

Grade point requirements and actions:

- A 3.0 or better end-of-term cumulative GPA results in continuing good standing.
- A 2.0 to 2.999 end-of-term cumulative GPA results in probation status.
- A 1.999 or less end-of-term cumulative GPA results in academic suspension status. Student's graduate committee reviews his or her record up to that time and recommends for continued enrollment or for the suspension status to go into effect.
- Action on part-time students is withheld until at least 9 credits are attempted at UWGB.

### 2. Student on Probation

Grade point requirements and actions:

- A 3.0 or better end-of-term cumulative GPA results in a return to good standing.

- A 2.999 or less end-of-term cumulative GPA may result in an academic suspension status at the end of any term after a cumulative total of 15 or more credits is attempted at UWGB. Student's graduate committee reviews his or her record up to that time and recommends for continued enrollment or for the academic suspension status to go into effect.

## Appeals

Academic probation is a nonpunitive warning that is not subject to appeal. Academic suspension status may be appealed by means of a special appeal to the associate dean of graduate studies. The associate dean may seek advice from the graduate faculty board of advisers. Appeals must be filed within two weeks after the end of the semester. A student who is allowed to continue will be on probation and is subject to any other special conditions that may be designated. Any appeal must include a clear explanation of the problems causing the inadequate achievement and how the student proposes to resolve those problems.

## Readmission

Readmission after an academic suspension is not automatic. The associate dean of graduate studies may decide to deny or to grant readmission subject to specific requirements or conditions. A student who is readmitted after an academic suspension is always readmitted on probation and is subject to normal standards of achievement required to continue as a graduate student. An application for readmission should be submitted to the associate dean of graduate studies at least 30 days in advance of the desired term of admission to allow for the review process.

## Grades and Grade Appeals

Each student receives a grade from the instructor in charge of a course at the end of each semester or session. Grades must be in the office of the registrar no later than 96 hours after a final examination. Information on current grading policies accompanies the grade rosters distributed by the registrar each semester.

If a student is dissatisfied and wishes to appeal a particular course grade, he or she must first contact the instructor who issued the grade. If the student is still dissatisfied, he or she may appeal to the associate dean of graduate studies who must, in turn, consult with the course instructor. A student who wishes to appeal beyond this level consults with the dean of arts, sciences and graduate programs who then consults with the instructor and the associate dean of graduate studies. The dean or associate dean act in advisory capacities to the student and instructor.

## Grade Changes

All final grades, with the exception of incompletes (I) or progress (PR), become permanent grades at the end of the following semester. Any discussions with faculty regarding grade levels or missing (N) grades must be pursued within this time period.

## Incompletes

If unusual, yet acceptable, circumstances prevent a student from taking or completing a final examination or other course work, he or she may arrange with the instructor to receive an incomplete in the course. The incomplete is filed with two tentative grades and a specific deadline for completing the work. The first tentative grade indicates the quality of the work to date, and the second grade will be assigned if no more work is completed. Before a grade of incomplete is accepted for recording, the course instructor must file an incomplete removal form, stating the conditions and specific deadline for removal. Since the course is incomplete, a student's grade points and degree credits remain undetermined until a permanent grade is established; however, a tentative academic action may be assigned on the basis of grades and credits received in other courses. The tentative action is reviewed after the incomplete is converted into a permanent grade.

## Incompletes for Graduating Students

Students anticipating graduation must remove all pending incompletes by the end of the sixth week of the final semester of attendance.

Outstanding incompletes will be considered as I grades for purposes of estimating eligibility for graduation.

### **Removal of Incompletes**

The course instructor is responsible for informing the student, the office of the registrar, and the associate dean of graduate studies as to the specific deadline for removing an incomplete. If no earlier deadline is specified, an incomplete (I) must be removed no later than the last day of classes for the following semester; this is the maximum allowable deadline. If no other grade is submitted by the instructor within this deadline, incomplete grades become a permanent grade of F with the normal effect on the student's grade point average and earned credits. A student may file a special petition for an exception to the removal deadline if actual unanticipated extenuating circumstances prevented compliance with the removal deadline, such as:

1. The student has serious physical or mental health problems documented by a physician or professional counselor's statement.
2. The student has had a death or serious illness in the immediate family; also documented by a physician's statement.
3. The course instructor is on leave during the semester for removal.

If a student is graduating, all I or PR grades must be converted to a permanent passing or failing grade before the commencement date. All grades on the record become permanent as of that date with no possibility for removal or change.

### **Repeating Courses**

Students may repeat a course only upon special petition to the associate dean of graduate studies. All repeated courses are designated with a letter R after the grade on the transcript. When a repeated course is completed, the original grade and entry on the transcript remain on the transcript, but the credits, grade, and grade points earned for the most recent completion are the only course records that affect cumulative attempted credits, grade points earned, and the grade point average. Courses repeated at another institution have no effect on the grade point average at UWGB.

## **Minimum and Maximum Credit Loads**

A graduate student in good academic standing may register for any number of credits up to a maximum of 12 credits per semester. A student will not be allowed to register for credits in excess of 12 if he or she does not have prior written permission from the associate dean of graduate studies to carry an overload. Any course adds that would have the effect of exceeding the maximum will not be processed if prior overload permission has not been granted.

A student may register for or reduce a program below 9 credits in a semester with the understanding that for certain purposes he or she will then be considered a part-time student. A student who reduces graduate credit level below 9 should consult the appropriate offices about implications for financial aid, government benefits, and other programs with credit load eligibility stipulations.

### **Maximum Credit Load for Probationary Students**

The maximum semester credit load is 9 credits for a graduate student on probation.

## **Course Adds**

After final registration a student may add other courses to his or her program if the addition does not exceed the maximum credit load limitation and is completed before a specific deadline for additions. During a normal semester, the add period is limited to the first two weeks of classes; for shorter terms an earlier deadline is in effect. A student may petition for an exception if unforeseeable extenuating circumstances prevented deadline compliance.

## **Course Drops**

The course drop deadline is established to allow students time to discover what content a course will cover, the type of readings and projects to be assigned, the instructor's teaching style, and the methods of evaluation. In some courses, feedback from a formal evaluation process may not be available before the drop deadline. In such cases, it is the student's responsibility to contact the instructor before

the drop deadline to obtain information useful in making the decision to drop. Therefore, lack of feedback in the form of grades on papers or examinations is not acceptable to justify a late drop.

The drop deadline is intended to stimulate a student to weigh carefully all of the important considerations and to do this as early as possible. If a student decides that a course does not fulfill expectations, an early drop permits the student to devote a greater portion of available study time and effort to remaining courses, and the instructor is able to devote more time and effort to the students participating in the course. The 6-week deadline for 14-week semester courses provides an adequate opportunity to make drop decisions.

The phases of the course drop policy are:

**Through the third day of the second week of a 14-week semester—**

- student may drop any course without the instructor's signature
- permanent records show no drop

**Fourth day of the second week through sixth week—**

- course appears on permanent record with the symbol W (withdrew) or DR (dropped)

**Seventh through 14th weeks—**

- no official drops allowed; WF grade or F appears on transcript

For terms or classes of a shorter duration than 14 weeks, pro rata deadlines are established as follows in the chart below.

**Late Program Changes and Withdrawals**

A student may be granted permission to drop a course or courses after the six-week deadline, or make a complete withdrawal after the normal twelfth-week deadline, if one of these specific criteria can be verified:

1. If the student has serious mental or physical health problems, verified by a physician's or professional counselor's statement.
2. If there is a death or prolonged serious illness in the immediate family; also verified by the family physician.

Under any of these circumstances, a counselor in the Student Counseling and Development Center or the associate dean of graduate studies is authorized to grant permission for a late drop or withdrawal, he or she should direct a written appeal, stating the circumstances, to the associate dean of graduate studies.

Course Length in Weeks	Drop Deadline-End of Course Session Week	"W" or "DR" Symbol Recorded After
1 .....	Tuesday, Week 1	Monday, Week 1
2 .....	Thursday, Week 1	Monday, Week 1
3 .....	Tuesday, Week 2	Tuesday, Week 1
4 .....	Thursday, Week 2	Wednesday, Week 1
5 .....	Monday, Week 3	Thursday, Week 1
6 .....	Wednesday, Week 3	Thursday, Week 1
7 .....	Friday, Week 3	Friday, Week 1
8 .....	Tuesday, Week 4	Monday, Week 2
9 .....	Thursday, Week 4	Monday, Week 2
10 .....	Monday, Week 5	Tuesday, Week 2
11 .....	Thursday, Week 5	Wednesday, Week 2
12 .....	Monday, Week 6	Thursday, Week 2
13 .....	Wednesday, Week 6	Thursday, Week 2
14 or more .....	Friday, Week 6	Friday, Week 2
	(normal semester course)	

A course session week always ends on a Friday. All courses that begin or end on nonstandard session weeks will have a nonstandard drop deadline.

## Withdrawal from the University

A student who desires to withdraw from all academic course work at any time after completing the study list request form or final registration must see a counselor in the Student Counseling and Development Center, his or her graduate adviser, or the associate dean of graduate studies. A complete withdrawal without failure may be requested at any time before 4:30 p.m. on the afternoon of the last day of regularly scheduled classes during the twelfth week of a semester or during the sixth week of an eight-week summer session. If a student has not attended classes or taken the final examination in a course, a grade of WF will be given unless official withdrawal procedures are followed.

A decision to withdraw should be given careful consideration in terms of academic retention policy, veteran's benefits, Social Security benefits, financial aid and other situations that have specific prohibitions against withdrawals.

## Pass-No Credit Grading

This special grading is permitted and required only for internships (797) and thesis writing (799) courses/credits at the graduate level. All other graduate credit courses must be taken on a regular graded basis.

## Audit Enrollment Information

With the permission of the instructor, a graduate student may audit an undergraduate course if space is available after undergraduate students who have enrolled for credit have been accommodated. Conditions and requirements for class participation are completely at the discretion of the course instructor. A student enrolled for credit may change to audit status for grading purposes, at any time up to the course drop deadline. *Audited credits do not count in determining credit completion requirements or for any program or benefits eligibility status.* Audited credits do count toward maximum credit load limitations. Any changes from audit status for grading purposes, must be completed within the course add period.

## Graduate Independent Study

Faculty approval signatures are required before registering for or adding independent study credits. Graduate faculty status includes only assistant, associate, and full professors, and full-time lecturers. Regular semester add and drop deadlines apply to independent study. Special 500-600-level numbered undergraduate courses do not require an independent study card. Graduate special (GSP) students are not eligible for 798 work except in the 006 area; graduate specials are also not eligible for 797 or 799 work.

## Special Petitions

A special petition is a formal written request for an exception to normal rules, regulations, and procedures and may be granted or denied. The rules, regulations, and requirements of the graduate program are the result of recommendations from the graduate faculty board of advisers and the Academic Actions Committee. Some rules may originate from legislative statutes or Board of Regents actions.

Exceptions to academic rules and regulations are granted if the petition states unforeseeable extenuating circumstances and relevant facts that fall within general parameters recommended by the Academic Actions Committee, and approved by the dean of arts, sciences and graduate studies. The associate dean of graduate studies is responsible for reviewing the petition. If a petition is denied, the student has the right of further appeal to the Academic Actions Committee.

Students contemplating an appeal should consider:

1. Are the relevant facts and dates clearly stated and documented?
2. Are the extenuating circumstances cited of an unforeseeable nature?
3. Are relevant recommendations from the instructor included, if this is appropriate?
4. Do the statements distinguish between needs and wants?
5. Is the educational rationale for the request stated?

## Veterans Administration Certification

Undergraduate courses taken as part of the load, but which are not for graduate credit, do not have the same effect for credit load requirements. Contact the veterans coordinator for clarification. Courses which do not meet for the full 14-week semester may only be counted as part of the credit load during those weeks that the course is actually meeting. Courses which do not meet every week can usually only be certified for the cost of fees.

If you are a Wisconsin veteran, be sure to learn about possible D.V.A. tuition and book

expense reimbursement possibilities before the end of the course; all applications must be on file in the D.V.A. office in Madison before the last day of the term.

Audit credits do not count for any veterans benefits programs.

## Other Rules

In matters not covered by the graduate academic rules and regulations as specified in this catalog, the graduate program follows rules and regulations for the undergraduate programs and courses at UWGB.

### Credit load requirements for "Cold War" or VEAP V.A. certification are:

<b>Graduate Credits</b>	<b>Fall Semester</b>	<b>4-week Summer</b>	<b>Spring Semester</b>	<b>8-week Summer</b>
9 or more	Full-Time		Full-Time	
8 credits	3/4 Time		3/4 Time	
7 credits	3/4 Time		3/4 Time	
6 credits	3/4 Time		3/4 Time	
5 credits	1/2 Time		1/2 Time	
4 credits	1/2 Time		1/2 Time	
3 credits	1/2 Time	Full-Time	1/2 Time	Full-Time
2 credits	- 1/2 Time	3/4 Time	- 1/2 Time	1/2 Time
1 credit	- 1/2 Time	1/2 Time	- 1/2 Time	1/2 Time

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