

## **Water Resources Management Program Course List**

Listed are courses that may be appropriate for meeting the requirements of the Water Resources Management Program. This is NOT meant to be all-inclusive or to set limits on the courses taken by a student; instead, it was developed to help students and staff in developing a course of study. Furthermore, new courses are added and old ones are dropped routinely, making this list only a broad guideline. Also note that many departments offer special topics courses, which may be of interest to Water Resources Management students. These courses are not included in the list because the course content changes frequently and the courses are not often taught on a regular basis.

In addition, course categories are not absolute. In fact, some courses may fall into more than one category and course content may vary somewhat from year to year. Therefore, it is important to discuss any changes that you want to propose with your advisor and/or faculty committee. Final approval of the plan of study is obtained at the time of your Evaluation and Guidance Conference (see WRM handbook for more detail) and is subject to the approval by both the faculty committee and the chair of Water Resources Management.

Because course scheduling often varies from year to year, we recommend checking with the appropriate department to verify when a course is to be offered. For a more complete description of the courses listed, see the Graduate School Catalog (also available on the WWW at <http://www.wisc.edu/grad/catalog>) or check with the appropriate department.

### CATEGORY REQUIREMENTS

- Category A: A minimum of 9 credits is required in the Natural Science and Technology category.
- Category B: A minimum of 9 credits is required in the Water Resources Institutions and Public Decision-Making Processes category.
- Category C: A minimum of 6 credits is required in the Analytical and Design Tools in Public Water Resources Management category.
- Area Specialty: A minimum of 15 credits is required in the area specialty category.
- Category D: A minimum of 6 credits in the Water Resources Management and Practicum Workshop category is required.

### Department Abbreviations Used:

A A E	Agricultural & Applied Economics
ATM OCN	Atmospheric & Oceanic Sciences
BOTANY	Botany
BSE	Biological Systems Engineering
CIV ENGR	Civil & Environmental Engineering
COMP SCI	Computer Science
ECON	Economics
ENVIR ST	Environmental Studies
EPD	Engineering Professional Development
FOREST	Forest Ecology & Management
GEOG	Geography
GEOLOGY	Geology
IND ENGR	Industrial Engineering
JOURN	Journalism & Mass Communication
L SC COM	Life Sciences Communication
LAND ARC	Landscape Architecture
LAW	Law
M&ENVTOX	Molecular & Environmental Toxicology
M H R	Management & Human Resources
O I M	Operations Research & Information Management
POLI SCI	Political Science
POP HLTH	Population Health Sciences
PHILOS	Philosophy
PUB AFFR	LaFollette School of Public Affairs
REAL EST	Real Estate
RUR SOC	Rural Sociology
SOC	Sociology
SOIL SCI	Soil Science
STAT	Statistics
TRAN P U	Transportation & Public Utilities
URB R PL	Urban & Regional Planning
WL ECOL	Wildlife Ecology
ZOOLOGY	Zoology

## CATEGORY A: NATURAL SCIENCE AND TECHNOLOGY

Department	#	Title	Credits	Semester
BSE	472	Sediment and Bio-nutrient Control Eng	3	1
BSE	473	Irrigation and Drainage Engineering	2	1
BSE	571	Small Watershed Engineering	3	2
BOTANY	330	Algae	3	1
BOTANY/FOREST	455	The Vegetation of Wisconsin	4	1
BOTANY/FOREST/ZOOLOGY	460	General Ecology	4	1, SS
BOTANY	802	Physiological Plant Ecology	3	Alt 2
BOTANY	825	Ecological Methods	3	Alt 1
CIV ENGR	310	Fluid Mechanics	3	1, SS
CIV ENGR	311	Hydroscience	3	1, SS
CIV ENGR	315	Hydrology	3	1
CIV ENGR	316	Hydraulic Engineering	3	2 or SS
CIV ENGR	320	Environmental Engineering	3	1, SS
CIV ENGR	411	Open Channel Hydraulics	3	Irr
CIV ENGR	412	Groundwater Hydraulics	3	Irr
CIV ENGR	414	Hydrologic Design	3	2
CIV ENGR	500	Water Chemistry	3	1
CIV ENGR	501	Water Analysis - Intermediate	2	1
CIV ENGR	502	Environmental Organic Chemistry	3	2
CIV ENGR	503	Water Analysis - Intermediate Lab	1	1
CIV ENGR	700	Chemistry of Natural Waters	3	1
ENVIR ST/LAND ARC	361	Wetlands Ecology	3	2 or SS
ENVIR ST	375	Field Ecology Workshop	3	1 or SS
ENVIR ST/ZOOLOGY/WL ECOL/BOTANY	651	Conservation Biology	3	2
ENVIR ST	710	Field Investigation in Wetland Ecology	3	1
FOREST	550	Forest Ecology	3-4	1
GEOG/GEOLOGY	326	Landforms: Topics and Regions	3	1 or 2 or SS
GEOG	329	Landforms & Landscapes of N. America	3	2 or SS
GEOLOGY/GEOG	320	Geomorphology	3	1
GEOLOGY/GEOG	420	Glacial and Pleistocene Geology	3	2
GEOLOGY	627	Hydrogeology	3-4	1
GEOLOGY	629	Contaminant Hydrogeology	3	2
M&ENVTOX	606	Colloquium in Environ. Toxicology	1	1, SS
POP HLTH/ENVIR ST	471	Introduction to Environmental Health	3	2
SOIL SCI	315	Soil Science for Land Use Planning	3	2
SOIL SCI	322	Physical Principles of Soil & Water Mgt	3	2
SOIL SCI/ENVIR ST	324	Soils and Environmental Quality	3	1
SOIL SCI	325	Pedology	3	1
SOIL SCI	621	Soil Chemistry	3	2
SOIL SCI	622	Soil Physics	3	Odd 1
WL ECOL	318	Principles of Wildlife Ecology	2	1
ZOOLOGY/ENVIR ST	315	Limnology-Conserv./Aquatic Resources	2	1, 2
ZOOLOGY	316	Lab-Conserv./Aquatic Resources	2	1, 2
ZOOLOGY/ENVIR ST	510	Ecology of Fishes	3	2
ZOOLOGY/ENVIR ST	511	Ecology of Fishes Lab	2	2
ZOOLOGY/BOTANY	725	Ecosystem Concepts	3	Alt 2
ZOOLOGY/ENVIR ST/GEOLOGY/ATM OCN	750	Problems in Oceanography	3	Alt 1

**CATEGORY B: WATER RESOURCES INSTITUTIONS & PUBLIC  
DECISION-MAKING PROCESSES**

<b>Department</b>	<b>#</b>	<b>Title</b>	<b>Credits</b>	<b>Semester</b>
A A E	760	Dynamic Natural Resource Economics	3	2
ENVIR ST/ECON/A A E	343	Environmental Economics	3-4	1
ENVIR ST/M&ENVTOX	368	Environ Law, Toxic Substances & Conserv	2	2 (Odd)
ENVIR ST/URB R PL/ECON/POLI SCI	449	Government and Natural Resources	3-4	SS
ENVIR ST	900	Seminar Topic - Global Water Issues	1-3	1, 2
FOREST	590	Integrated Resource Management	3	1
GEOG/ENVIR ST	339	Environmental Conservation	3-4	1, 2, SS
IND ENGR/M H R	729	Behavior Analysis/Mgt & Decision Making	3	Alt 2
JOURN	614	Communication and Public Opinion	4	1 or SS
JOURN/ENVIR ST/L SC COM	860	Science and Environment Communication	3	Irr
LAND ARC/ENVIR ST/FOREST	654	Aesthetic Assessment of Landscapes	3	2
LAND ARC/ENVIR ST	730	Local Resource Policy Analysis	3	2
LAW/URB R PL	830	Land Use Controls	3	1
LAW	845	Water Rights Law	2-3	2
LAW	848	Intro to Environmental Law	3	2
PHILOS/ENVIR ST	441	Environmental Ethics	3-4	1, 2
POLI SCI	444	Administration of Public Policy	3-4	1 or 2 or SS
POLI SCI	446	Politics of Government Regulation	3-4	1 or 2 or SS
POLI SCI/PUB AFFR	530	Ethics and Values in Policy Making	3-4	SS
PUB AFFR/POLI SCI	869	Workshop in Program & Policy Analysis	3	2
PUB AFFR/POLI SCI/URB R PL	874	Policy-Making Process	3	1
PUB AFFR/POLI SCI/URB R PL	878	Public Management	3	2
PUB AFFR	880	Microeconomic Policy Analysis	3	1
PUB AFFR	881	Benefit-Cost Analysis	3	1
REAL EST/URB R PL/ECON/A A E	306	The Real Estate Process	3	All
REAL EST	706	The Real Estate Process	3	All
RUR SOC/SOC	541	Social Behavior and Natural Resources	3	Irr
RUR SOC/SOC	573	Strategies & Assessment of Social Change	3	Irr
RUR SOC/SOC	748	Environmental Sociology	3	1
RUR SOC/FOREST/LAND ARC/SOC/(267)	749	Soc Policy & Mgt/Nat Park & Protect Area	3	1
SOC/RUR SOC	745	Sociological Perspectives on Sci & Tech	3	Irr
TRAN P U	725	Public Utilities	3	1, 2
URB R PL	731	Intro to Regional Planning	3	2
URB R PL	751	Intro to Financial Planning	3	2
URB R PL/ENVIR ST	821	Resources Policy Issues: Regional & Nat'l	2-3	Alt 1
URB R PL/ENVIR ST	843	Land Use Policy and Planning	3	1
URB R PL/ENVIR ST	865	Water Resources Institutions and Policies	3	Alt 1
WL ECOL	515	Renewable Resources Policy	3	2 or SS

**CATEGORY C: ANALYTICAL & DESIGN TOOLS IN  
PUBLIC WATER RESOURCES MGT**

Department	#	Title	Credits	Semester
A A E	706	Applied Risk Analysis	3	Irr
A A E	760	Dynamic Natural Resource Economics	3	2
CIV ENGR/ENVIR ST/FOREST	301	Intro to Aerial Photographic Systems	1	1 or SS
CIV ENGR/ENVIR ST/FOREST	303	Intro: Rmt Sensing Dig Image Processing	1	1 or SS
CIV ENGR/ENVIR ST/FOREST	304	Rmt Sens. Vis Image Interpret & GIS Integ	1	1 or SS
CIV ENGR	307	Fundamental Comp. for Land Info Systems	1	1
CIV ENGR	308	Spatial Frameworks for Land Info Systems	1	1
CIV ENGR/GEOG/ENVIR ST	357	Intro to GIS	4	1
CIV ENGR	358	Hydrographic and Topographic Surveying	1	Irr
CIV ENGR	359	Hydrographic & Topographic Mapping	2	Irr
CIV ENGR	414	Hydrologic Design	3	2
CIV ENGR	450	Short Course in Surveying	3	Irr
CIV ENGR	494	Civil & Environ Eng. Decision Making	3	2 or SS
CIV ENGR	495	Civ & Environ Eng. Systems Model Tech.	3	1
CIV ENGR/ENVIR ST	656	Engineering Applications for Land & GIS	3	1
CIV ENGR	716	Statistical Modeling of Hydrologic Systems	3	Alt 1
COMP SCI	302	Introduction to Programming	3	All
COMP SCI	310	Problem Solving Using Computers	3	1, SS
COMP SCI/IND ENGR/MATH/STAT	525	Linear Programming Methods	3	1 or SS
E P D	397	Technical Communication	3	All
ENVIR ST/CIV ENGR/FOREST	302	Intro: Electro-opt & Microw Rmt Sens Syst	1	1 or SS
ENVIR ST/CIV ENGR/LAND ARC	556	Remote Sensing Digital Image Processing	3	1 or SS
ENVIR ST	575	Assessment of Environmental Impact	3	Even 2
FOREST/A A E/ENVIR ST	652	Decision Methods for Nat Res Managers	3-4	2
GEOG	360	Quantitative Methods for Geog Analysis	4	1 or 2 or SS
GEOG/ENVIR ST/CIV ENGR	377	Introduction to Geographic Info Systems	4	1, SS
GEOLOGY/CIV ENGR/GLE	555	Airphoto Interpretation for Terrain Eval	2	Alt 1
GEOLOGY	724	Groundwater Flow Modeling	3	Alt 2
IND ENGR	313	Engineering Economic Analysis	3	1, SS
IND ENGR	323	Operations Res: Deterministic Modeling	3	1
IND ENGR	516	Intro to Decision Analysis	3	2
JOURN	415	Science and Environmental Journalism	4	1
LAND ARC/ENVIR ST/CIV ENGR	655	Computerized Land Information Systems	3	2 or SS
LAND ARC/ENVIR ST/SOIL SCI	695	Applications of GIS in Natural Resources	3	1
O I M	410	Operations Research	3	1
PUB AFFR/POLI SCI	819	Quantitative Methods for Public Policy	3	2
SOC/RUR SOC	358	Design & Analysis of Social Research	3	2 or SS
SOC/RUR SOC	359	Statistical Analysis of Social Research	4	2 or SS
SOC/RUR SOC	360	Statistics for Sociologists I	4	All
STAT	301	Intro to Statistical Methods	3	All
STAT	311	Intro to Mathematical Statistics	4	1, SS
STAT	312	Intro to Mathematical Statistics	4	1, SS
STAT	349	Intro to Time Series	3	2
STAT/FOREST/HORT	571	Statistical Methods for Bioscience I	4	1
STAT/FOREST/HORT	572	Statistical Methods for Bioscience II	4	2
URB R PL/PUB AFFR/ECON	734	Regional Economic Problem Analysis	3	1
URB R PL	752	Cap. Imp. Programming & Capital Budget	3	1
ZOOLOGY	535	Ecosystem Analysis	3	Even 2