

WATER RESOURCES MANAGEMENT, DOCTORAL MINOR

REQUIREMENTS

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GRADE REQUIREMENT

Students must earn a B or better in courses used to satisfy doctoral minor requirements.

REQUIRED COURSES

Students select courses in consultation with their doctoral minor advisor and departmental advisor. Minor and major requirements cannot overlap or double-count.

| Code | Title | Credits |
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| Practicum | | |
| Students must complete the following courses. | | |
| CIV ENGR/ ENVR ST/ URB R PL 718 | Water Resources Management Practicum Planning Seminar II | 2 |
| CIV ENGR/ ENVR ST/ URB R PL 719 | Water Resources Management Summer Practicum | 4 |
| Breadth | | |
| | Students must complete two courses numbered 300 or above from the categories below. The course lists below are not meant to be all-inclusive, and students are not restricted to the courses listed here. This is a sample of appropriate courses for these categories that are offered through various departments/programs. Breadth courses should complement the doctoral major and academic background as well as address any gaps in training within the curriculum breadth categories. | 5 |
| Total Credits | | 11 |

Category A: Natural Science & Technology courses

| Code | Title | Credits |
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| AGROECOL/ ENVR ST 724 | Agroecosystems and Global Change | 3 |
| ATM OCN/ PLANTSCI 532 | Environmental Biophysics | 3 |
| ATM OCN/BOTANY/ CIV ENGR/ ENVR ST/GEOSCI/ ZOOLOGY 911 | Limnology and Marine Science Seminar | 1 |
| BOTANY 330 | Algae | 3 |
| BOTANY/ENVR ST/ F&W ECOL/ ZOOLOGY 516 | Conservation Biology | 3 |
| BOTANY/ F&W ECOL 402 | Dendrology: Woody Plant Identification and Ecology | 3 |

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| BOTANY/GEOG 338 | Environmental Biogeography | 3 |
| BOTANY/ ZOOLOGY 725 | Ecosystem Concepts | 3 |
| BSE 571 | Small Watershed Engineering | 3 |
| BSE/CIV ENGR/ SOIL SCI 372 | On-Site Waste Water Treatment and Dispersal | 2 |
| BSE/ENVR ST 367 | Renewable Energy Systems | 3 |
| CIV ENGR 310 | Fluid Mechanics | 3 |
| CIV ENGR 311 | Hydroscience | 3 |
| CIV ENGR 320 | Environmental Engineering | 3 |
| CIV ENGR 415 | Hydrology | 3 |
| CIV ENGR 500 | Water Chemistry | 3 |
| CIV ENGR 618 | Special Topics in Hydraulics and Fluid Mechanics | 1-3 |
| CIV ENGR 619 | Special Topics in Hydrology | 1-3 |
| CIV ENGR/ ENVR ST/ URB R PL 717 | Water Resources Management Practicum Planning Seminar I | 1 |
| ENVR ST 901 | Graduate Orientation Seminar | 1 |
| ENVR ST/ F&W ECOL/ ZOOLOGY 360 | Extinction of Species | 3 |
| ENVR ST/ GEOG 339 | Environmental Conservation | 4 |
| ENVR ST/ GEOSCI 411 | Energy Resources | 3 |
| ENVR ST/ LAND ARC 361 | Wetlands Ecology | 3 |
| ENVR ST/ POP HLTH 471 | Introduction to Environmental Health | 3 |
| ENVR ST/ SOIL SCI 324 | Soils and Environmental Quality | 3 |
| ENVR ST/ SOIL SCI 575 | Assessment of Environmental Impact | 3 |
| ENVR ST/ ZOOLOGY 315 | Limnology-Conservation of Aquatic Resources | 2 |
| ENVR ST/ ZOOLOGY 510 | Ecology of Fishes | 3 |
| ENVR ST/ ZOOLOGY 511 | Ecology of Fishes Lab | 2 |
| GEOG 342 | Geography of Wisconsin | 3 |
| GEOG/GEOSCI 420 | Glacial and Pleistocene Geology | 3 |
| GEOSCI 875 | Advanced Topics in Geology | 1-3 |
| GEOSCI/G L E 627 | Hydrogeology | 3-4 |
| LAND ARC 668 | Restoration Ecology | 3 |
| SOIL SCI 301 | General Soil Science | 3 |
| SOIL SCI 621 | Soil and Environmental Chemistry | 3 |
| ZOOLOGY 316 | Laboratory for Limnology- Conservation of Aquatic Resources | 2-3 |
| ZOOLOGY 955 | Seminar-Limnology | 1 |

Category B: Water Resources Institutions & Public Decision-Making Processes courses

| Code | Title | Credits |
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| A A E/ECON/ ENVR ST 343 | Environmental Economics | 3-4 |

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| A A E/ECON/ ENVIR ST/ URB R PL 671 | Energy Economics | 3 | ISY E/M H R 729 | Behavioral Analysis of Management Decision Making | 3 |
| A A E/ECON/ F&W ECOL 531 | Natural Resource Economics | 3 | INTER-HE 801 | Special Topics in Human Ecology | 1-3 |
| A A E/ENVIR ST/ POP HLTH/ PUB AFFR 881 | Benefit-Cost Analysis | 3 | JOURN 566 | Communication and Public Opinion | 4 |
| ANTHRO 477 | Anthropology, Environment, and Development | 3 | LAW 845 | Water Rights Law | 2-3 |
| C&E SOC 375 | Special Topics | 1-4 | LAW 848 | Introduction to Environmental Law | 3 |
| C&E SOC/CURRIC/ ENVIR ST 405 | Education for Sustainable Communities | 3 | LAW/URB R PL 830 | Land Use Controls | 3 |
| C&E SOC/SOC 541 | Environmental Stewardship and Social Justice | 3 | LSC 560 | Scientific Writing | 3 |
| C&E SOC/SOC/ URB R PL 617 | Community Development | 3 | POLI SCI/ PUB AFFR 871 | Public Program Evaluation | 3 |
| CIV ENGR/ ENVIR ST/ URB R PL 717 | Water Resources Management Practicum Planning Seminar I | 1 | POLI SCI/ PUB AFFR/ URB R PL 874 | Policy-Making Process | 3 |
| CSCS 460 | Civil Society and Community Leadership | 3 | POLI SCI/ PUB AFFR/ URB R PL 878 | Public Management | 3 |
| ECON/ENVIR ST/ POLI SCI/ URB R PL 449 | Government and Natural Resources | 3-4 | PUB AFFR 974 | Topics in Public Affairs | 3 |
| ENGL/ ENVIR ST 305 | Rhetoric, Science, and Public Engagement | 3 | URB R PL 590 | Contemporary Topics in Urban and Regional Planning | 1-3 |
| ENVIR ST 349 | Climate Change Governance | 3 | URB R PL 601 | Site Planning | 3 |
| ENVIR ST 402 | Special Topics: Social Perspectives in Environmental Studies | 1-4 | URB R PL 731 | Introduction to Regional Planning | 3 |
| ENVIR ST 901 | Graduate Orientation Seminar | 1 | URB R PL 741 | Introduction to Planning | 3 |
| ENVIR ST/ F&W ECOL 515 | Natural Resources Policy | 3 | URB R PL 841 | Urban Functions, Spatial Organization and Environmental Form | 2-3 |
| ENVIR ST/ GEOG 337 | Nature, Power and Society | 3 | | | |
| ENVIR ST/ GEOG 339 | Environmental Conservation | 4 | | | |
| ENVIR ST/ GEOG 439 | US Environmental Policy and Regulation | 3-4 | | | |
| ENVIR ST/HISTORY/ LEGAL ST 430 | Law and Environment: Historical and Contemporary Perspectives | 3 | | | |
| ENVIR ST/JOURN/ LSC 823 | Science and Environment Communication | 3 | | | |
| ENVIR ST/ PHILOS 441 | Environmental Ethics | 3-4 | | | |
| ENVIR ST/POLI SCI/ PUB AFFR 866 | Global Environmental Governance | 3 | | | |
| ENVIR ST/ SOIL SCI 575 | Assessment of Environmental Impact | 3 | | | |
| ENVIR ST/ URB R PL 843 | Land Use Policy and Planning | 3 | | | |
| ENVIR ST/ URB R PL 865 | Water Resources Institutions and Policies | 3 | | | |
| ENVIR ST/ URB R PL 917 | Public Participation for Planning and Policy Making | 3 | | | |
| GEOG 340 | World Regions in Global Context | 3 | | | |

| Category C: Analytical & Design Tools in Water Resources courses | | |
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| Code | Title | Credits |
| A A E/ENVIR ST/ POP HLTH/ PUB AFFR 881 | Benefit-Cost Analysis | 3 |
| BSE 571 | Small Watershed Engineering | 3 |
| CIV ENGR 310 | Fluid Mechanics | 3 |
| CIV ENGR 415 | Hydrology | 3 |
| CIV ENGR 416 | Water Resources Systems Analysis | 3 |
| CIV ENGR 515 | Hydroclimatology for Water Resources Management | 3 |
| CIV ENGR/ ENVIR ST/ GEOG 377 | An Introduction to Geographic Information Systems | 4 |
| CIV ENGR 516 | Hydrologic Data Analysis | 3 |
| CIV ENGR/ ENVIR ST/ LAND ARC 556 | Remote Sensing Digital Image Processing | 3 |
| ECON/PUB AFFR/ URB R PL 734 | Regional Economic Problem Analysis | 3 |
| ENVIR ST/ F&W ECOL/G L E/ GEOG/GEOSCI/ LAND ARC 371 | Introduction to Environmental Remote Sensing | 3 |
| ENVIR ST/GEOG/ LAND ARC/ URB R PL 532 | Applications of Geographic Information Systems in Planning | 3 |
| ENVIR ST/ LAND ARC/ SOIL SCI 695 | Applications of Geographic Information Systems in Natural Resources | 3 |

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| ENVIR ST/ SOIL SCI 575 | Assessment of Environmental Impact | 3 |
| F&W ECOL/STAT 571 | Statistical Methods for Bioscience I | 4 |
| F&W ECOL/ STAT 572 | Statistical Methods for Bioscience II | 4 |
| GEOG 378 | Introduction to Geocomputing | 4 |
| GEOG 500 | Qualitative Strategies in Geography | 3 |
| GEOG 579 | GIS and Spatial Analysis | 4 |
| GEOG 970 | Seminar in Geographic Information Science | 1-3 |
| GEOSCI/G L E 627 | Hydrogeology | 3-4 |
| GEOSCI/G L E 724 | Groundwater Flow Modeling | 3 |
| M H R 728 | Bargaining, Negotiating and Dispute Settlement for Managers | 3 |
| PUB AFFR 818 | Introduction to Statistical Methods for Public Policy Analysis | 3 |
| PUB AFFR 819 | Advanced Statistical Methods for Public Policy Analysis | 3 |
| REAL EST/ URB R PL 720 | Urban Economics | 3 |
| SOC WORK/ URB R PL 721 | Methods of Planning Analysis | 3 |
| STAT 301 | Introduction to Statistical Methods | 3 |
| URB R PL 841 | Urban Functions, Spatial Organization and Environmental Form | 2-3 |