

Water Resources Program

Robert P. Berrens, Director
Water Resources Program
Economics Building, Room 1048
MSC05 3110
1 University of New Mexico
Albuquerque, NM 87131-0001
(505) 277-7759; FAX: (505) 277-5226
wrp@unm.edu
<http://www.unm.edu/~wrp>

Graduate Advisor

Robert P. Berrens
505-277-5249
rberrens@unm.edu

Program Committee

Melinda H. Benson (Geography), J.D., University of Idaho
Reed Benson (Law), J.D., University of Michigan
Robert Berrens (Economics), Ph.D., Oregon State University
Rebecca Bixby (Biology), Ph.D., University of Michigan
Katie Emmer (THEMAC Resources Group Ltd.), M.W.R., University of New Mexico
David Gutzler (Earth and Planetary Sciences), Ph.D., Massachusetts Institute of Technology
Bruce Milne (Sustainability Studies, Biology), Ph.D., Rutgers University
Caroline Scruggs (Community and Regional Planning), Ph.D., Stanford University
Mark Stone (Civil Engineering), Ph.D., Washington State University

Graduate Program

Degree Offered

- **Master of Water Resources (M.W.R.)**
Concentrations: Hydrosience; Policy and Management.

The Water Resources Program (WRP) offers the Master of Water Resources (M.W.R.) degree, an interdisciplinary professional degree designed to prepare students for careers in water resources. Applicants to the program must have a basic proficiency in at least one water-related discipline (defined rather broadly) such as engineering, sociology, management, public administration, environmental studies, economics, law, chemistry, planning, political science, geology, geography and biology, among others—or professional experience in the water field. The goal of the M.W.R. degree program is to expand and deepen students' knowledge of their primary disciplines and provide them with an integrated perspective on the importance of water in socio-economic and environmental contexts, improve their capacity for critical thinking and develop their technical and communication skills. UNM's location in the Southwest means that there is a focus on arid region water issues; however, the M.W.R. degree is designed to provide its students a firm grounding in water resources that is applicable to any region.

The M.W.R. degree is obtained by taking a sequence of courses in one of two concentrations: Hydrosience (HS) or Policy and Management (PM). The degree requirements consist of 39 credit hours: 36 credit hours of course work plus 3 credit hours for a professional project. The HS concentration is designed primarily for students with technical orientation in the physical and biological sciences and engineering. This concentration leads to further expertise in the technical aspects of water resources management. The PM concentration is intended for students with interests in the social and economic sciences, administration, and planning. This concentration develops the student's skills in the administrative, economic, and socio-political aspects of water resources management. The curriculum for each concentration is flexible, enabling a student to design a course of study that achieves his/her career objectives with guidance from his/her advisor and graduate committee.

The Water Resources Program and the Department of Community and Regional Planning have created a program of studies leading to the dual degrees of M.W.R. and Master of Community and Regional Planning (M.C.R.P.). This program consists of 53 credits of classes in Community and Regional Planning, Water Resources, and related subjects, and 6 credits of thesis or project. Details can be found at the [Water Resources Program Web site](#). Students interested in other dual degree options should contact the Director.

The Water Resources Program faculty is drawn from six schools (Law, Engineering, Medicine, Public Administration, Architecture and Planning, Medicine) and the College of Arts and Sciences. The Program is administered by a Program Committee drawn from the faculty and a Director, who functions as a department chair.

Admission Requirements

The admissions requirements for the M.W.R. degree program are as follows:

1. A bachelor's degree from an accredited college or university;
2. A grade point average of at least 3.0 out of 4.0 for the last two years of undergraduate work. (A student with a grade point average below 3.0 may be admitted if his/her experience/qualifications indicate likely success in the program.)
3. Three references from individuals qualified to assess the applicant's academic and/or professional qualifications. At least one individual must be a current/former professor. These letters must be sent to WRP.
4. Successful completion (C or better) of the following courses. These can be taken at other institutions; UNM equivalent courses are listed in parentheses.

Hydroscience (HS) Concentration:

- Calculus I (MATH 180 or 162L); Calculus II (MATH 181 or 163L); and Statistics (STAT 145). Note: MATH 162L and 163L are highly recommended.
- Introductory Microeconomics (ECON 106) or Intermediate Microeconomics I (ECON 300).
- Three introductory (or higher) science courses (UNM 100-level) from at least two different disciplines.

Policy-Management (PM) Concentration:

- Calculus I (MATH 180 or 162L) and Statistics (STAT 145).
- Introductory Microeconomics (ECON 106) or Intermediate Microeconomics I (ECON 300).
- Two introductory (or higher) science courses (UNM 100-level). These may be from two different disciplines.
- One introductory or higher course in: sociology (SOC 101); or political science (POLS 110); or psychology (PSY 105). Note: a student entering with a major or minor in one of the above must take a course in one of the remaining two disciplines.

5. A one to two page letter of intent describing the student's interests in water resources, experience in the field, objectives and future plans. This document is helpful in assessing the applicant's aptitude for the program and in assigning a temporary advisor. These letters must be sent to WRP.

Normally, applicants must satisfy the prerequisites before they can be admitted to the program, however, students with exceptional qualifications may be admitted if they are missing one prerequisite. Applicants missing more than two prerequisites may not be admitted. The Graduate Record Examination (GRE) is not required for admission.

Admission Deadlines

November 15	Spring semester
July 15	Fall semester

The deadlines for international applicants are August 1 and March 1 for the spring and fall semesters respectively. Prospective students are advised to apply as early as possible as available slots may be filled prior to the published deadlines.

Master of Water Resources

- Concentrations: Hydrosience; Policy and Management.

Curriculum Requirements

A student selects a concentration in either Policy-Management (PM) or in Hydrosience (HS). This selection should be made before the student completes 12 credit hours of course work.

39 credit hours are required: 36 credit hours of formal course work, and 3 credit hours for a professional project. The credit hours are distributed as follows:

1. 12 credit hours in the Water Resources interdisciplinary (core) courses: WR 571, WR 572, and WR 573.
2. 15 credit hours from courses in the student's concentration (HS or PM) (see below for suggested HS and PM courses).
3. 6 credit hours of courses in the other group (HS or PM). If the student's concentration is PM, these six credit hours must come from the HS group, and vice-versa.
4. 3 credit hours from the Utilities Group courses (see below).
5. 3 credit hours of WR 598 (Professional Project). The student can take more than 3 credit hours of WR 598, but only 3 credit hours may count towards the degree.

Courses are subdivided into three groups; suggested courses are listed below. A complete list of suitable courses is maintained in the WRP office and on the WRP Web site and updated periodically.

Note: Students without suitable undergraduate course work may be required to take remedial courses for no graduate credit. Individual courses listed below may have prerequisites in excess of the M.W.R. prerequisites. No 300-level courses for graduate credit may apply to the M.W.R. degree, except CE **335.

Note: WR 590 Internship can substitute for a Group I or II course, depending upon the nature of the internship. See the Director for details.

Group I: Hydrosience Courses

- Hydrology and Hydraulics (WR 576; CE *442, 540, 541, 542, 545, 549; EPS 562)
- Ecosystems, Environment, Health, and Water Quality (BIOL *451, *495, 505, 514, 535, 558; CE **335, 531, 532, 534, 536, 537L; CRP 527; ENV5 530; EPS 515, 535, 543, 558; PH 502, 506)
- Climatology (EPS 536, 537)

Group II: Policy and Management Courses

- Law (LAW 547, 554, 575, 580)
- Economics (ECON 542, 543, 544; CRP 565)
- Policy, Administration and Management (CRP 515, 532; GEOG 561, 562; PADM 500, 574; PH 554)
- Sociology, Communication and Culture (AMST 520, 523; CJ 518; CRP 574)

Group III: Utilities Courses

These are courses related to modeling or mapping that are applicable to investigations and management of water resource issues.

- GIS (CE 547; CRP 583; GEOG 581L, 586L, 587L, 588L; EPS 555L)
- Methods (ECON *407, 504, 545; PH 538)
- Modeling (ECON 540, 545; EPS 557L)

Concentration in Hydrosience

- 15 credit hours from HS Group I, with at least one course from each category;
- 6 credit hours from PM Group II, from two different categories;
- 3 credit hours from Utilities Group III

Concentration in Policy and Management

- 6 credit hours from HS Group I, with courses from two different categories;
- 15 credit hours from PM Group II, with at least one course in any three of the four categories;
- 3 credit hours from Utilities Group III

Professional Project

Each student must complete a 3 credit hour professional project. The student selects the topic in consultation with his/her advisor and committee and conducts the work under their guidance. The student must present the results of his/her work in an open forum and successfully defend the project before an advisory committee. This defense functions as the Master's examination. Examples and guidelines for preparation of the professional project report are available from the Water Resources Program office, the Web site, and the Program Guidelines.

Keys and Symbols Reference

Courses

WR 551-552. Problems. (1-3 to a maximum of 6 Δ)

WR 571. Water Resources I-Contemporary Issues. (4)

WR 572. Water Resources II-Models. (4)

WR 573. Water Resources III - Field Problems. (4)

WR 576. Physical Hydrology. (3)

WR 590. Internship. (3)

WR 595. Topics in Water Resources. (1-4 to a maximum of 9 Δ)

WR 598. Professional Project. (1-3, no limit Δ)