

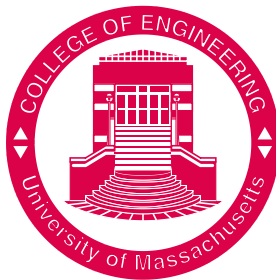


**DEPARTMENT OF
CIVIL & ENVIRONMENTAL
ENGINEERING**

**ENVIRONMENTAL & WATER RESOURCES ENGINEERING
GRADUATE PROGRAM**

**INFORMATION, PROCEDURES, AND
ADVISING MANUAL**

September 2013



**COLLEGE OF ENGINEERING
UNIVERSITY OF MASSACHUSETTS at AMHERST**

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PREFACE

This manual is designed to assist graduate students and faculty in the UMass Environmental and Water Resources Engineering (EWRE) Program. It contains the following information:

- *** General information about key personnel and faculty in the Department of Civil and Environmental Engineering (CEE) and the EWRE Program;
- *** Summaries of degree requirements, advising procedures, and Program requirements including forms which must be completed for the M.S. degree program.
- *** Other EWRE Program information.

The EWRE Program is a graduate program within the Department of Civil and Environmental Engineering. The Department offers and administers three graduate degrees: M.S. and Ph.D. in Civil Engineering and the M.S. in Environmental Engineering. Any of these three degrees may be pursued by eligible students studying environmental and water resources engineering. Specific information regarding requirements for the degrees are described in later sections.

EWRE PROGRAM OBJECTIVES

The faculty have organized the EWRE Program, including its curriculum, course requirements, course content, and research activities to educate and prepare our students for careers in environmental and water resources engineering research and professional practice. The specific objectives of the EWRE Graduate Program are:

- 1) Program graduates will enter the environmental and water resources engineering profession or continue with PhD level graduate studies.
- 2) Program graduates will be recognized by supervisors and colleagues as possessing the skills needed to successfully work in the environmental and water resources engineering profession.
- 3) Program graduates will provide service to society through involvement in professional societies, community groups, charitable organizations or similar activities.
- 4) Throughout their careers, program graduates will use educational opportunities to continue to expand their understanding and skills in science and engineering for the protection of human health and the environment.

PEOPLE YOU SHOULD KNOW

CIVIL AND ENVIRONMENTAL ENGINEERING PERSONNEL

The Department of Civil and Environmental Engineering main offices are located on the second floor of Marston Hall. Graduate students may interact with the CEE Department Head, CEE Graduate Program Director and Department staff. These individuals are:

- * Richard N. Palmer, Professor and Head, Department of Civil and Environmental Engineering, Marston 224, (545-2508),
- * Sanjay Arwade, Assoc. Professor, Department of Civil and Environmental Engineering, Marston 223, (577-0926), Graduate Program Director, MS and PhD Programs
- * Kelley Ives, Administrative Officer, Marston 235B, (545-2567).
- * Jodi G. Ozdarski, Academic Assistant, Grad & Undergrad students, Marston 226, (545-0686).
- * Vivien Venskowski, Secretary, Marston 224, (545-2508)
- * Mary S. Bisbee, Secretary, Marston 18 (545-2172)
- * Sherrie Webb-Yagodzinski, ELab II Laboratory Manager,(577-3231)
- * Dave Glazier, Technician, Gunness (545-2754)

ENVIRONMENTAL & WATER RESOURCES ENGINEERING FACULTY AND STAFF

The faculty in the EWRE Program (as of September 2013) are:

- * David P. Ahlfeld, Professor, Marston 12A (545-2681)
- * Casey Brown, Assistant Professor, Marston 12B, (577-2337)
- * Caitlyn Butler, Assistant Professor, Marston 16B, (545-5396)
- * David W. Ostendorf, Professor, Marston 18C (545-5395)
- * Richard N. Palmer, Professor, Marston 224 (545-2508)
- * Chul Park, Assistant Professor, Marston 16A (545-9456)
- * Mi-Hyun Park, Assistant Professor, Marston 16D (545-5390)
- * David A. Reckhow, Professor, EWRE Program Coordinator, Marston 16C (545-5392)
- * John E. Tobiason, Professor, Marston 21 (545-5397)

The Program staff include:

- * Kathleen Whyntott, Grants Manager, Marston 18 (545-0687)

GETTING SET UP

Paychecks. Paychecks can be obtained from Mary Bisbee in the EWRE Program office (Marston 18) every second Friday. Students who want their checks deposited directly into a local bank should obtain appropriate forms from the Human Resources Office in Whitmore Hall. Statements for automatic deposits will also be sent to the Program office.

Photocopying. For graduate students on research projects, photocopying services are available through the Program office (Marston Hall, Rm. 18) and in ELab II Rm 210. In order to use this service for a research project, you need your advisor's permission and a copying code. Personal copying is strictly limited and is charged at the rate of ten cents per page.

Offices. Students who are funded as teaching or research assistants are assigned an office and a research area (if appropriate) located in either Marston Hall or Engineering Laboratory II (ELAB II). Specific room and desk assignments are made by the EWRE Program Coordinator.

Keys. Office keys can be obtained contacting Mary Bisbee in Marston 18. It is important to keep office and lab areas locked during “off hours” (approx. 6 pm to 8 am, Mon-Fri, and on weekends). When leaving office or lab areas, each person should make sure doors are locked. Many doors in ELab II require a key to be unlocked, and require a key to re-lock the door. Please keep doors locked during “off-hours” and assume that doors will be locked (i.e., carry your keys with you). Access to ELab II between 7 pm and 7 am, Monday-Friday, and on weekends is gained by swiping your UMass ID card through readers near the building entrance doors. You must supply Mary Bisbee with your UMass ID number so you can be entered on the list of persons allowed to access the building.

Telephone. Several student office areas have phones. The student phones are for local and long distance calls. A telephone access number is needed from your advisor to use the telephone system for making long distance calls. Long distance calls are to be made only for University business.

Mailboxes. EWRE graduate students have a mailbox in Rm 12 Marston Hall (Perrell Lab). Memos and notices from staff members, as well as faxes, messages from professors, etc., will be put in the mailboxes. It is important that you check your mailboxes regularly to learn of important announcements. Please also note that most memos and notices will be distributed via email, so check that regularly also.

Computer Services. Engineering Computing Services (ECS) supports the research and instructional computing needs of the College of Engineering. ECS installs and maintains all network hardware within the College. ECS operates a cluster of Unix-based computers that operate the mail system and other network functions. These Unix-based computers can be accessed through an ECS account from any computer in the College that is connected to the network. Most EWRE students will use their own personal computers. However, it is essential that all graduate students have an ECS account to have access to university email. The Program uses email extensively to communicate among staff, faculty and students. Account applications and related information are available in the ECS office in Marcus Room 100. The Program has one computer room for use by EWRE graduate students: Marston 12 (Perrell Lab). Please refer to the Computing Facilities section at the end of this document for a complete description of the facilities and procedures to follow in using these facilities.

Laboratories. The Program has several research and teaching laboratories in Marston Hall and ELAB II. The use of these facilities is described in the [*Environmental Engineering Research Laboratory Rules and Protocols Manual*](#) which contains information about the program’s laboratories.

Responsibilities of Assistantships. Students who receive 20 hours per week of TA or RA support are full-time students (half time in courses and thesis and half time on TA or RA activities). As such, employment outside the Program is highly discouraged. It is also expected that students will remain on-campus while receiving support. The timing and length of vacations or other trips off campus should be approved by your advisor.

DEGREE REQUIREMENTS AND ADVISING

GENERAL

Graduate students in the Environmental and Water Resources Engineering Program may pursue one of three graduate degrees. The Department of Civil and Environmental Engineering offers M.S. and PhD degrees in Civil Engineering (with emphasis in environmental engineering) and the EWRE Program offers the M.S. in Environmental Engineering degree.

The material presented below is provided for the information and guidance of graduate students and their faculty advisors. Regulations governing the degrees come from three levels: the Graduate School, the Department of Civil and Environmental Engineering, and the EWRE Program. Your faculty advisor (see Advising) will assist you in the planning of your graduate degree program so that you meet all requirements; however, the ultimate responsibility lies with the student. Students register for up to 16 credits of coursework via the web-based SPIRE system¹. In some cases students may need assistance from Jodi Ozdarski to override system controls².

There are certain documents/information sources you should have access to so you can meet all requirements. From the Graduate School you should refer to the current online information in the ***Graduate School Bulletin*** and the ***Graduate School Handbook***. These documents provide information about Graduate School regulations, registration, due dates, thesis and dissertation requirements, etc.

In addition the Department of Civil and Environmental Engineering has information available on ***Regulations Governing The M.S. and Ph.D. Programs of the Department of Civil and Environmental Engineering***. The information is available on the CEE Department web site at <http://cee.umass.edu/cee/graduate/forms-regulations>

Academic Honesty. The UMass Academic Honesty Policy applies and can be found in the Code of Student Conduct online at:

http://www.umass.edu/dean_students/codeofconduct/acadhonesty/

This policy covers plagiarism, cheating, fabrication and facilitating dishonesty. In our “online” world of electronic information, it is especially important to properly cite and quote sources to refrain from plagiarism.

M.S. DEGREES

Two M.S. degrees are offered: the M.S. in Civil Engineering and the M.S. in Environmental Engineering. EWRE Program requirements are presented here. As mentioned earlier, be sure to refer to the documents indicated above for Graduate School and CEE Department requirements.

The M.S. in Environmental Engineering is more closely aligned with the program’s roots in process engineering and therefore requires students to have taken at least one graduate level course in this area. The M.S. in Civil Engineering is the degree option that should be taken by students not wishing to study process engineering. In addition to the traditional 2-year research-based option, the program also offers a one-year coursework-based option. This is designed to be completed in 9 to 12 months and students in this program typically do not receive financial assistance from the Program. Students who have been admitted into the Program without an engineering baccalaureate must make up prerequisite coursework at the basic level of undergraduate engineering in order to be eligible for an MS degree; no graduate credit is granted for this basic level work. Please see your faculty advisor if you have any questions.

¹ 17 or more credits requires written approval from the DH, 19 or more credits also requires written justification

² e.g., independent studies, pre-requisites not yet recognized by the system, or requirements for prior UMass GPAs

Research Option

The graduate course requirements for students in the research-based MS in Environmental Engineering program are described below. All degree candidates must earn a minimum of 31 graduate credits.

*** Core Courses**

The core courses are intended to provide students with a basic knowledge of environmental and water resources engineering and design. These required courses are:

<u>Designation</u>	<u>Title</u>	<u>Credits</u>
CEE 670	Transport Processes in EWRE	4
CEE 691/692	Seminar	1

*** Master's Project**

The student is required to write a research report and present an oral defense before a Master's Committee on a topic determined in consultation with the advisor. The content of the report normally derives from the research conducted by the student as part of their research assistant duties. Six (6) credits, taken as CEE 689, must be earned under the Master's Project and are part of the 31 total credit requirement; more than 6 credits of CEE 689 may be earned, but only 6 credits apply to the 31 credit total required for the M.S .degree. The Master's Committee consists of the student's advisor and at least one other EWRE faculty member.

*** Electives**

In addition to the Core Courses and Master's Project, the student completes a minimum of twenty credits of electives taken in areas relevant to the student's professional objectives. All elective courses must be taken at the graduate level (500 level or higher). Students may take graduate level electives in other departments at the University; however, no more than 9 graduate credits taken outside the Civil and Environmental Engineering Department can be counted toward the 31 credit requirement.

*** Transfer Credits**

No more than six graduate credits can be transferred from courses taken at another institution. These credits must be at the graduate level and must not have been utilized to have met prior undergraduate or graduate degree requirements.

Coursework Option

This option is similar to the Research Option, but there are some significant differences. It has a 31 credit requirement. Students are able to complete this degree in a 12 month period rather than the 18 to 24 month period which is typical for the research option for a student with a BS in Engineering. This shorter time frame is possible since students are not employed as teaching or research assistants. Financial aid is not offered for this option.

*** Core Courses**

The core courses for the coursework option are the same as those for the research option as described above (total of 5 credits).

*** Electives and Transfer Credits**

There are 26 credits of electives. All electives must be taken at the graduate level. As noted above, up to 9 credits of graduate level electives may be taken outside of the CEE Department. Also, up to six credits of graduate level coursework from other institutions may be formally transferred as long as those credits were not required to earn any prior degree.

Students with Non-engineering Baccalaureate

To be awarded the degree of Master of Science in Environmental Engineering, students without a BS in engineering degree must make up prerequisite coursework at the undergraduate level; this coursework does not receive graduate credit. The coursework can be completed prior to entering, or during, the student's UMass MS program. A summary of these prerequisites is shown below and a form for documenting completion of the prerequisites is included in the Appendix of this document.

Required prerequisite courses/subjects for the MS degree program:

- Calculus I
- Calculus II
- Calculus III (multivariate)
- Differential Equations
- Probability & Statistics
- Biology
- Chemistry
- Physics
- Thermodynamics
- Engineering Economics
- Statics
- Fluid Mechanics
- Introductory EWRE course(s)

PhD DEGREE

The graduate student and advisor should consult and follow the CEE Department web site regarding requirements and regulations pertaining to the PhD degree (**Regulations Governing the M.S. and PhD Programs of the Department of Civil and Environmental Engineering**). Information on Degree requirements, Committees, Examinations, etc., is described. In addition to the CEE Department regulations, the Environmental and Water Resources Engineering Program has requirements for the major area, minor area, and research skill that are greater and more comprehensive than the CEE Department, and a specific format for the Ph.D. Comprehensive Examination.

PhD Curriculum: Course and Credits

EWRE field. There are no specific course requirements. **The student must demonstrate mastery of knowledge in the EWRE area.** For example, courses taken in the MS degree may suffice, but in some cases, in consultation with the PhD Committee, the student may be required to take some additional courses.

Course Credits – General. For students entering the PhD program with an MS in a related field, the minimum coursework requirement is 18 credits. For students entering the PhD program without an MS degree, or with an MS degree in an unrelated field, the minimum coursework requirement is normally 43 credits (25 + 18). In addition, all PhD students are required to earn at least 18 dissertation credits. This is above and beyond the coursework credit requirements.

Course Credits - Supporting Area. Completion of a supporting program of 12 credits is required. The goal is for PhD students to support their research and career plans with this coursework. This may involve coursework in one or more academic programs outside of environmental engineering; examples include chemistry, chemical engineering, microbiology, public health, math, statistics, modeling, geology, etc..

Course Credits - Research Skill. Completion of 6 credits devoted to a "research skill" such as statistics, numerical methods or advanced computer programming is required. Other courses deemed appropriate by the PhD Committee may also be taken.

Dissertation Credits. The CEE Department and EWRE Program requirements are the same, but are described here for your convenience. A minimum of 18 Dissertation credits (CEE 899 Doctoral Dissertation) must be earned in addition to the minimum total of 18 credits of Minor Area and Research Skill courses specified above.

PhD Preliminary Comprehensive Examination.

To become a Ph.D. candidate, all Ph.D. students must pass a Preliminary Comprehensive Examination. This exam is offered each January and summer (as needed) and consists of written and oral examinations. The Environmental and Water Resources Engineering Program requires a specific format for this exam as described below.

The Ph.D. Preliminary Comprehensive Exam is conducted in approximately a one week period in three parts. The exam must be taken before the 4th semester after the student begins the PhD Program. The exam is administered by the individual student's Ph.D. Committee. The Ph.D. Committee consists of the student's advisor and at least two other EWRE faculty members.

Written Portion of the Ph.D. Comprehensive Exam

Part 1: Fundamentals of Environmental & Water Resources Engineering

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Schedule: Part 1 of the written portion will typically be given on a Monday of the examination week.

Examining Committee: This exam is administered by the student's advisor with the help of the EWRE Program Coordinator; questions may be solicited from any EWRE faculty member.

Composition: A six hour, closed book, written exam in which the student answers four questions from the following seven subject areas (subject to the constraints (***) noted below):

1. Physical Principles of EWRE (required)
2. Biological Principles of EWRE
3. Chemical Principles of EWRE
4. Mathematical Methods in EWRE
5. Treatment Processes
6. Hydrology and Hydraulics
7. Water Resource Systems

***** All students must answer question 1.**

Rules: Must pass overall exam (total score $\geq 70\%$), 6 hours total, in-class, closed book, on the same day.

Part 2: Advanced Topics in Environmental and Water Resources Engineering

Schedule: This portion of the written comprehensive exam will typically be handed out on Tuesday morning and is due on Wednesday morning.

Examining Committee: Ph.D. Committee, specific to each student; exam to be administered by the candidate's advisor.

Composition: This portion of the exam is take home, open book, one day working time, prepared by the individual students' Ph.D. Committee and specific to each candidate. All of the committee members should together prepare this portion of the exam.

Rules: A passing grade must be earned on the question.

Oral Portion of the Ph.D. Comprehensive Exam

Schedule: To be taken within two days to one week following completion of the Written portion of the PhD Preliminary Comprehensive exam.

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Examining Committee: PhD Committee, specific to each candidate; oral exam to be administered by the candidate's advisor.

Format: The student will respond to oral questions from the committee. The exam is expected to last about two hours. This exam should not be combined with a presentation and defense of the Dissertation Prospectus.

Rules: A passing grade must be earned from all committee members for the overall comprehensive exam. If on the first attempt the student fails to pass, the committee will direct the student to re-take the entire comprehensive exam, or portions thereof, within a specified time period after the first attempt. If this second attempt ends in failure, the student will not be allowed to continue.

Doctoral Dissertation Committee, Prospectus, and Defense

After becoming a PhD Candidate, a Doctoral Dissertation Committee for each student is appointed. This committee consists of the student's advisor, at least one other EWRE faculty member, and one graduate faculty member outside of the CEE Department. The Dissertation Committee must approve the candidate's Dissertation Prospectus/Outline and the final Dissertation. The Prospectus defense must occur at least seven months prior to the Dissertation defense.

Teaching and Service

All of the EWRE Program Ph.D. students are encouraged to obtain teaching experience as part of their education. Each student should talk to their advisor about having the opportunity to present lectures in appropriate courses or to serve as a Teaching Assistant. In addition, the EWRE Program has a philosophy of having everyone work together to help the program. In this regard, both M.S. and Ph.D. students are called upon to help with certain program activities.

ADVISING

This section places emphasis on advising for the M.S. degrees, particularly the M.S. in Environmental Engineering. Students who have enrolled in the PhD program should consult the CEE Department website for information (***Regulations Governing the M.S. and PhD Programs of the Department of Civil and Environmental Engineering***).

Advisor Definitions. Each student is assigned an Advisor upon admission to the Environmental and Water Resources Engineering Program. The Advisor will advise the student on curriculum matters, course registration, and on the MS Project Report or PhD Dissertation.

Initial Registration. New graduate students upon arrival on campus should schedule an appointment with their Advisor for the purpose of registering for courses for their first semester. It is required that the student with the assistance of the Advisor fill out a plan using the **Plan of Study** (Appendix A) of how they will fulfill degree requirements for their projected period of study. **This plan should be approved by the Advisor and sent to the EWRE Program Coordinator for approval within four weeks of the beginning of the student's first semester on-campus.** The purpose of the plan is to insure that all students understand degree requirements and have a plan to satisfy them. It is understood that students and faculty will not always know which courses will be taught in the future, and therefore it will not always be feasible to identify courses with specific semesters. What is important is that students have prepared a plan showing in which semester they intend to take specific courses. Please e-mail Jodi

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Ozdarski (ozdarski@ecs.umass.edu) to request electronic versions of the forms in Appendix A or download them from the web page <http://cee.umass.edu/cee/graduate/forms-regulations> .

Semester Registration Meetings. Prior to the start of classes each semester, the student should meet with his/her advisor regarding course selection. At this meeting the Plan of Study Form can be updated. As the Form is updated the Advisor should place a current copy in the student's official file which is maintained in the CEE Department office.

Degree Completion Requirements. M.S. and PhD degree students should consult the CEE Department website for procedures to follow and for requirements regarding completion of your degree (**Regulations Governing the M.S. and PhD Programs of the Department of Civil and Environmental Engineering**). In addition the Environmental and Water Resources Engineering Program has three additional requirements.

* **M.S. Program Summary Form** (Appendix A)

A final completed copy of this form must be prepared and signed by both the student and Advisor. This form should be forwarded to the Graduate Program Director for approval along with the Degree Application/Eligibility Form. Please allow sufficient time for the Graduate Program Director to review this material prior to deadlines established by the CEE Department and the Graduate School. Once approved by the Graduate Program Director, Jodi Ozdarski will forward all necessary documents to the Graduate School.

* **Graduate Data Information Form** (Appendix A) **and Questionnaire**

All students should fill out the Graduate Data Information Form as well as the Graduate Student Questionnaire and leave these with Jodi Ozdarski.

* **Laboratory and Office Area Clean-up** (Appendix A)

The student is responsible for cleaning up his/her laboratory area. This includes glassware and equipment. Your Advisor should go over this item with you and verify its satisfactory completion prior to signing the University's Degree Application/Eligibility Form. This form must also be forwarded to the Graduate Program Director. Personal belongings in your office area should be removed and personal files on any CEE or EVE Program computers should be deleted. Consult with your advisor regarding the need to back-up research project files.

PROFESSIONAL SOCIETIES

Listed below are a number of professional associations related to the Environmental and Water Resources Engineering field. In addition, a variety of journals are listed which contain environmental engineering and water resources material. To provide an idea of the types of papers found in each, a number of subject areas are listed with each journal. Many of the associations or journals have student membership rates. The reduced fees provide you with an excellent opportunity to join these professional societies or to purchase the journals. The Program encourages membership and the presentation of research results at professional society conferences.

Associations.

AIR AND WASTE MANAGEMENT ASSOCIATION (AWMA) - publishes Journal of the Air and Waste Management Association, Environmental Management (EM) and other books and periodicals.

AMERICAN CHEMICAL SOCIETY (ACS) – highly respected journal of interest is Environmental Science and Technology; chemistry of air, water, soil, etc.

AMERICAN GEOPHYSICAL UNION (AGU) - publishes Water Resources Research.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) - has a number of different divisions including Environmental Engineering, Water Resources Planning and Management, and Hydraulics, with associated journals.

AMERICAN SOCIETY FOR MICROBIOLOGY (ASM) - publishes Applied Environmental Microbiology.

AMERICAN WATER RESOURCES ASSOCIATION (AWRA) – professional association dedicated to advancements in water resources management, research, and education

AMERICAN WATER WORKS ASSOCIATION (AWWA) – North American association focused on all aspects of drinking water. Regional organization is the New England Water Works Association.

INTERNATIONAL WATER ASSOCIATION (IWA) – international association covering all aspects of water (drinking, storm, wastewater) publishes Water Research, Aqua and other books and periodicals.

NATIONAL GROUND WATER ASSOCIATION (NGWA) - publishes groundwater journals.

WATER ENVIRONMENT FEDERATION (WEF) – North American association focused on wastewater and stormwater. Regional organization is the New England Water Environment Association; publishes Water Environment Research and Water Environment and Technology.

Journals.

Applied Environmental Microbiology (ASM)

– environmental microbiology; microbiology of water; wastewater microbiology

Environmental Engineering Science

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- all aspects of environmental engineering

Environment International

- water quality; water treatment; water resources

Environmental Science & Technology (ACS)

- air and water pollution control processes, aquatic and atmospheric chemistry, water resources, solid wastes, hazardous wastes

Environmental Technology

- all areas of environmental technology and pollution

Environmental Toxicology and Chemistry (SETAC)

- all aspects of environmental toxicology and chemistry

Groundwater (NGWA)

- groundwater quality and quantity

Groundwater Monitoring and Remediation (NGWA)

- groundwater monitoring; groundwater contamination and cleanup

Journal Air and Waste Management Association (AWMA)

- air quality; air pollution control
- solid and hazardous waste management
- environmental remediation

Journal American Water Works Association (AWWA)

- water supply and treatment

Journal of Environmental Engineering (ASCE)

- all areas of environmental engineering are covered

Journal of Environmental Quality (SSSA)

- unsaturated zone contamination
- phytoremediation
- pesticide/herbicide fate and transport

Journal of Hydraulic Engineering (ASCE)

- hydraulics of engineered and natural systems

Journal of the American Water Resources Association (AWRA)

- management and planning for water resources; hydrology
- prior to 1997, known as Water Resources Bulletin

Journal of Water and Health (IWA)

- relatively new international journal with broad coverage

Journal of Water Resources Planning and Management (ASCE)

- modeling and optimization techniques for water resources

Journal of Water Supply: Research and Technology – AQUA (IWA)

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- water supply and water quality; water treatment; water distribution

Microbial Ecology (ISME)

- environmental microbiology; microbial ecology; biological treatment

Soil Science Society of America Journal (SSSA)

- soil physics, chemistry and microbiology

Water Environment and Technology (WEF)

- general information and news, wastewater & stormwater oriented

Water Environment Research (WER)

- wastewater treatment, environmental microbiology, industrial wastes, water pollution

Water Research (IWA)

- water quality and pollution; wastewater treatment

Water Resources Research (AGU)

- management, planning, math modeling, and programming for water resources
surface and groundwater hydrology

Water Science & Technology (IWA)

- water quality and pollution; water treatment

Water Well Journal (NGWA)

- written from the well drilling industry perspective

COMPUTING FACILITIES

A wide variety of computing facilities are used by EWRE Program Graduate students. Students may use their own PC (desktop or laptop) with access to UMass Office of Information Technology (OIT) and College of Engineering Engineering Computer Services (ECS) networks via hardware ports in ELab 2 or via wireless network connections. Access to the ECS network requires completion of forms available in the ECS Main office in Marcus Hall. Some students are supplied with, and/or have access to, a PC as part of their research work, either at an office desk or within a research laboratory. Availability generally depends on the nature of the research and budgeted funds; consult with your advisor.

Students in the EWRE Program can make use of computers located in 12 Marston Hall, the Perrell Lab, as described below. Also, ECS and OIT maintain computers in other rooms around campus. ECS facilities include PCs in Marston 112, Marston 134 and Elab 306 which are linked to ECS servers and the Internet. Access to these machines requires an account on either the ECS system or the OIT system. Also, wireless internet access is available through ECS and OIT at an increasing number of campus locations.

Marston Hall 12 Computer Room (Perrell Lab)

The Perrell Lab is available for use by graduate students in the Department of Civil and Environmental Engineering and for selected undergraduate students. The Lab contains nine computers with full access to

the Internet and a server. Input/output devices available in the lab include a scanner, laser printer, color laser printer and color plotter.

Access to Marston 12 requires knowledge of the keypad code. Please see Mary Bisbee to obtain the code. The computers in Marston 12 are linked to the ECS network, so access is via your ECS username and password.

Supplies and Maintenance

The need for toner and observations of hardware or software problems should be brought to the attention of ELab II Lab Manager Sherrie Webb-Yagodzinski or the EWRE Program Coordinator. You may also contact ECS staff who provide support for both software and hardware problems on our computers.

The computer room and computers need regular cleaning and maintenance. Please use common sense with regards to cleanliness and food around the computer and printers.

Software

There is a variety of software available on the computers in Marston 12. This includes the Microsoft Office suite and such engineering packages as Fortran compilers, SigmaPlot and AutoCAD. Copying of software, except public domain software, is illegal. It is the policy of the Civil and Environmental Engineering Department and EWRE Program that only software obtained legitimately with proper licensing may be used on Department computers.

Personal software and data should not be copied onto the hard disk drives of the PCs. Please utilize CDs, flash memory or zip disks for your own work and delete any unnecessary files from the hard disks.

E Lab II Printing

The CEE Department maintains a printer/copier/scanner machine in E Lab II Rm 210 (EWRE office area). This machine is accessed via the ECS network for printing and scanning. You will be supplied with information needed to download appropriate drivers to utilize the printing and scanning functions. The machine is also a standard photocopier. You must utilize an appropriate ID number as supplied by your advisor. The ID number is specific to your advisor and/or research project. The machine is not for personal use.

APPENDIX A – PROGRAM FORMS

Examples of the MS Program forms are shown on the following pages. Actual electronic versions of these forms for your use can be obtained by email from Jodi Ozdarski – ozdarski@ecs.umass.edu – or downloaded from the UMass EWRE graduate program web pages of the CEE Department web site (<http://cee.umass.edu/cee/graduate/EWRE/student-resources>).

**University of Massachusetts - Department of Civil and Environmental Engineering
Environmental and Water Resources Engineering Graduate Program**

PROGRAM SUMMARY (for students entering Sept 2010 or later)

Master of Science Degree Program

To Be Completed at End of Studies

Student:

Degree Completion Date:

Student No.:

Advisor:

Semester Entered Program:

Prior degree(s) and institution:

COURSE NUMBER AND TITLE	TOTAL CREDIT	SEMESTER TAKEN	GRADE
REQUIRED COURSES:			
CEE 670 Transport Processes in EWRE	4		
CEE 691/692 Seminar (1 credit towards MS degree)	1		
ELECTIVE COURSES (all at 500 level or higher)*:			
TOTALS			
REQUIRED CREDIT TOTALS	31		

* ___ At least 7 credits from electives at 600 or higher level
* ___ At least 17 credits of CEE courses among electives

FINAL APPROVAL

Research Option	<input type="checkbox"/>	Requires CEE 689 (6cr)
Course Option	<input type="checkbox"/>	
MS Env Engr	<input type="checkbox"/>	Requires CEE 671 or 672
MS Civil Engr	<input type="checkbox"/>	

Student Sign. _____
and date

Advisor's Sign. _____
and date

Prog. Coord. Sign. _____
and date

Fish Passage Engineering (Letter of Specialization)– Requires CEE 560, 561 or 577, 597F + 4cr related

**University of Massachusetts – Department of Civil and Environmental Engineering
Environmental and Water Resources Engineering Graduate Program**

PLAN OF STUDY FOR SATISFYING MS PROGRAM PREREQUISITES

FOR STUDENTS WITHOUT a prior BS in Engineering Degree

This form is to be completed within one month of entering Program by students who do not possess an undergraduate engineering degree.

Student: _____

Prior Degree/Institution: _____

Prerequisite General Course/Subject Description	Course Number(s) & Institution	Semester Taken or Planned
Calculus I		
Calculus II		
Calculus III (multivariate)		
Differential Equations		
Probability & Statistics		
Biology		
Chemistry		
Physics		
Thermodynamics		
Engineering Economics		
Statics		
Fluid Mechanics		
Introductory EWRE course(s)		

PLAN APPROVAL (submit within 1 month)

Student Sign _____
and date

Advisor's Sign. _____
and date

Prog. Coord. Sign. _____
and date

**University of Massachusetts Dept. of Civil and Environmental Engineering
Environmental and Water Resources Engineering Graduate Program**

Course Planning Form – Chronological Basis

Student: _____ **Program Entry Semester:** _____

Semester:		Semester:	
Course No. & Title	Credits	Course No. & Title	Credits
Semester:		Semester:	
Course No. & Title	Credits	Course No. & Title	Credits
Semester:		Semester:	
Course No. & Title	Credits	Course No. & Title	Credits

GRADUATE DATA INFORMATION FORM

Name:

Thesis/Project/Report Title:

Advisor:

Date of Defense:

Initial Position:
(Title/Address/Phone Number)

Forwarding Address:

UMass Amherst Department of Civil and Environmental Engineering

Form CEE.9 - Graduate Student Final Check-Out List

Graduate Student Check-Out List

Student Name and Number _____

Degree Achieved/Area _____

1. Degree Eligibility Form Completed: _____

2. Degree Eligibility Form Approved by Chairperson: _____

3. Key(s) turned in: _____

4. Project/Thesis/Report/Dissertation submitted: (date) _____

5. Library books turned in: _____

6. Area/Professors personal books returned: _____

7a. Study area cleaned: _____ Room # _____ Desk # _____

7b. Lab area cleaned: _____ Room # _____ **Advisor's Initial** _____

7c. Computer files removed: : _____ Room # _____ **Advisor's Initial** _____

8. All "incomplete" grades changed: _____

9. Forwarding address: _____

SIGNED:

Student - Items 5,6,9 Date: _____

Key Return – Item 3 Date: _____

Academic Assistant - Items 1,2,4,7,8 Date: _____