Students in Arts and Sciences embrace the opportunity to delve into multifaceted academic interests, embodying in 21st century terms Ezra Cornell’s “any person … any study” founding vision. Tell us about the areas of study you are excited to explore, and specifically why you wish to pursue them in our College.

After 376 consecutive weeks, California finally became drought-free last year. For the first time since 2011, prodigious rains filled reservoirs and provided deep snowpack to sustain us. This is no small feat that means Californians can wash their cars again; rather, these long droughts have radically reshaped entire industries, negatively impacting quality of life for millions of Californians.

Witnessing this dramatic climatic event compelled me to pursue water conservation efforts. For the past two years, I have worked with Dr. Dustin Mulvaney at SJSU, researching ways to minimize water usage and maximize efficiency at utility-scale solar projects in the Southwest’s arid biosphere, where scarce water sources are vulnerable to over-withdrawals. *Environmental Science and Technology* is publishing our work this fall. Undergraduate research is a key aspect of the Earth and Environmental Sciences major, which is a main factor in my desire to attend Cornell.

The prospect of working with

As much of my current conservation efforts revolve around water, one course I am looking forward to taking is “[Sustainable Safe Water on Tap](https://classes.cornell.edu/browse/roster/FA19/class/CEE/4520),” which incorporates problem-solving and design principles to examine potential solutions to national-and-international-level water quality challenges, especially water contamination. Developing design algorithms, students are pushed to pursue novel solutions to water treatment and quality preservation, understanding how to take what we learn in class and implement it in real life, where it can help create tangible change, a hallmark of Cornell’s education.  This class’s takeaways guide me on more effective approaches to protecting our water resources, so I can improve upon my advocacy and cleanup strategies with CWC.

Expanding on my advocacy experiences, “Environmental Policy Processes,” is another course I want to take, as it explores the intersection of environmental conservation and public policy.  Taught by Dr. T. Bruce Lauber and Dr. Clifford Kraft, it explores in-depth the environmental policy process, focusing on defining environmental problems, the theoretical framework for policy development and implementation, ways in which various outside institutions, interests, and constraints influence policy decision-making, and the vital role that science and scientific research plays in the development and implementation of policy. Through independent research, interviews with Washington policy experts, policy briefs and presentations on specific environmental policy issues, and discussions with leading policy makers in a trip to Wolpe Cornell Center in Washington, D.C, this course teaches students to devise unique, novel solutions, like I have started to do in creating policy proposals with MAP and CWC, examining these issues from the lenses of policy creation and implementation,

<https://www.eas.cornell.edu/faculty-directory/susan-j-riha>

<https://www.eas.cornell.edu/faculty-directory/toby-r-ault>

<https://ecologyandevolution.cornell.edu/robert-warren-howarth>

<https://ecologyandevolution.cornell.edu/david-m-lodge>

<https://ecologyandevolution.cornell.edu/peter-mcintyre>

<https://ecologyandevolution.cornell.edu/nelson-george-hairston>

The [New York Water Environment Association, Inc. (NYWEA)](http://nywea.org/) was founded in 1929 by professionals in the field of water quality as a nonprofit, educational organization. Association members helped lead the way toward existing state and national clean water programs. Today, the Association has more than 2,500 members of diverse backgrounds and specialties, but all are concerned and involved with protecting and enhancing our precious water resources.

The Manhattan College chapter of this organization hosts panel discussions, guest lectures and symposiums, as well as other events to increase students' awareness of environmental issues.

We are a student organization for those interested in Protecting Water Resources, Water Quality, Public Health, Sustainability, Ecology, and/or the Environment. We offer student members with opportunities like:

• Meeting Potential Employers!

• Getting Reduced Membership and Meeting Registration

• Keeping Current on Technical & Regulatory Development

• Networking with Environmental Professionals

• Scholarship Opportunities

• Professional Recognition & Development

• Presenting Papers at Chapter & Statewide Meetings

• Becoming an author for the NYWEA Clearwaters magazine

• Learning and practicing leadership roles by becoming actively involved in the organization

• Making a contribution to more effective water environment activities

Clear Waters

All NYWEA members receive the Association's quarterly publication, [Clear Waters](http://www.nywea.org/SitePages/Membership/clearwaters.aspx). This first rate technical magazine contains articles on environmental issues, regulatory changes, technological advances as well as, updates on members and activities. Currents is the on-line email newsletter of the Association which keeps members apprised of timely issues including meetings, job opportunities and other pertinent news issues.

Getting involved with other aspects of the NYWEA organiztion than it is currently

* An abstract that provides detail on the technical content which contributes to the professional practice of engineering and/or highlights application of engineering principles. This can include purely technical topics and aspects of engineering project management as well. Eligible topics include law and/or ethics and the health, safety, and/or welfare of the public. Topics such as business or operations management are not PDH-eligible.
* A statement of the learning objectives and what technical information will be presented (ex: engineering calculations, data useful for design).

**CEE 4520**

[Sustainable Safe Water on Tap](https://classes.cornell.edu/browse/roster/FA19/class/CEE/4520)

*Course information provided by the* [*Courses of Study 2019-2020*](http://courses.cornell.edu/index.php?catoid=36)*.*

This problem-centered design course focuses on major water quality challenges both nationally and internationally. Human and context driven design principles are applied to contaminants with global public health impact. Course will develop design algorithms from first principles whenever possible and explore novel solutions. Students work in teams to design water treatment systems using Python and open source design tools.

**CEE 4565**

**BEE 4110 - Hydrologic Engineering in a Changing Climate**

(CU-CEL)

Fall. 3 credits. Letter grades only.

Prerequisite: introduction to probability and statistics (e.g., [CEE 3040](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=573590), [ENGRD 2700](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=574562), [ILRST 2100](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=575274), [BTRY 3010](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=573531), or [AEM 2100](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=572561)), one hydrology course (e.g., [BEE 3710](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=573230)) or climate course (e.g., [EAS 3050](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=574244)) at the 2000 level or higher or permission of instructor. Co-meets with [BEE 6110](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=583016).

S. Steinschneider.

Introduces methods in hydrologic engineering to assess and cope with climate variability and change. The course will cover both statistical and physical approaches to analyzing and modeling hydrologic systems. Topics include time series analysis, extreme event frequency analysis, trend detection, water balance modeling, and climate change assessments for water systems. Applications to water supply, stormwater, and flood risk analyses are discussed and used as examples throughout the course.

Outcome 1: Students will apply knowledge of mathematics, science, and engineering to define and solve problems in hydrologic engineering.

Outcome 2: Students will improve their ability to identify, formulate, and solve engineering problems.

Outcome 3: Students will display competence in oral and written communication.

Outcome 4: Students will demonstrate knowledge of contemporary environmental issues.

# NTRES 3240 - Sustainable, Ecologically Based Management of Water Resources

(CU-SBY)

Spring. 3 credits. Student option grading.

Permission of instructor required for freshmen and sophomores. Enrollment limited to: junior, senior or graduate student standing. Co-meets with [NTRES 6240](http://courses.cornell.edu/preview_course_nopop.php?catoid=36&coid=578634).

R. Schneider.

In-depth analyses of those ecological and biological principles relevant to the sustainable management of global fresh and marine water resources. Lectures and discussion integrate scientific literature with current management issues, including water supply, dams, irrigation, and groundwater overdraft, and coastal development. Topics include linkages between hydrologic variability and communities, groundwater-surface connections, flow paths for dispersal, patchily distributed water resources, and water quality controls on organisms, and adaptations to climate change.

Outcome 1: Students will be able to synthesize relevant hydrologic, ecological, and sociological information in order to make sound recommendations for sustainable watershed management.

Outcome 2: Students will gain insights into, and understanding of cultural, religious, and philosophical influences on water policy decisions around the world.

Outcome 3: Students will be able to analyze critical hydrologic data and tools, such as hydrographs and groundwater potentiometric surface maps, to understand natural and altered processes in water resources.

Outcome 4: Students will be able to access web-based, federal data-bases necessary for appropriate watershed management decisions.

Outcome 5: Students will gain experience in critical professional skills, including interpretation of research journal articles, creation of extension fact sheets, team-based negotiation, and presenting professional quality talks using Powerpoint.