

# Course Syllabus

 Edit

Spring Semester, Tuesdays, 3:00-3:50 PM, live and in-person, 137 Loomis Laboratory

Luis F. Rodríguez, Ph.D., Associate Professor, Agricultural and Biological Engineering

## Course Description

This course will provide students a forum for critical reflection on intercultural experiences and global engagement necessary to create resilient solutions for disaster prone regions around the world. We

will work closely with partner communities and peer institutions to analyze actual community-identified problems and collaboratively seek potential solutions with those communities. Students will be able to explore potential solutions with community members. This course will consist of a series of weekly meetings and course modules including selected readings, class discussion, and virtual exchanges coupled with reflective writing assignments leading to a term project designed to encourage exploration of Puerto Rico, its culture, recent disaster events, and the importance of stakeholder engagement.

## Instructors

If Email: use the Canvas system to email your instructors

Slack messages are preferred in our #eng177-students space.

### Contact Information for your Instructors

Instructors	Contact Information	Office Hours
<b>Luis F. Rodríguez, Ph.D., Lead</b>	O: +1-217-333-2694 M: +1-832-875-3024 E: <a href="mailto:lfr@uillinois.edu">lfr@uillinois.edu</a> ( <a href="mailto:lfr@uillinois.edu">mailto:lfr@uillinois.edu</a> )	<a href="https://outlook.office365.com/owa/calendar/BioMassLab@uillinois.edu">Accessible to you for reservation via Bookings</a>  ( <a href="https://outlook.office365.com/owa/calendar/BioMassLab@uillinois.edu">https://outlook.office365.com/owa/calendar/BioMassLab@uillinois.edu</a> )  Open door policy: You may feel free to drop by at any time to room 100 in the Engineering Sciences Building. Feel assured that I will make time for you.
<b>Charlotte Ernst, BS (expected May 2027, Engineering Learning Assistant)</b>	E: <a href="mailto:ce19@uillinois.edu">ce19@uillinois.edu</a>	Office Hrs: Available by appointment via zoom or in person. Please email me at <a href="mailto:ce19@uillinois.edu">ce19@uillinois.edu</a> .

## Other Key Personnel

# International Programs in Engineering (IPENG)

Patrick Kearns, Academic Advisor & Coordinator of International Experiential Learning; e: [pkearns@illinois.edu](mailto:pkearns@illinois.edu)

## Grainger First Year Experience

Brian Woodard, Interim Program Coordinator; e: [bswoodrd@illinois.edu](mailto:bswoodrd@illinois.edu)

## Amizade, LTD.

Bibi Al-Ebrahim, Education Director; e: [bibi.alebrahim@amizade.org](mailto:bibi.alebrahim@amizade.org)

## Caras con Causa

Adriana Ayala González, Volunteer Coordinator; e: [a.ayala1@causapr.org](mailto:a.ayala1@causapr.org)

## Credits (1 undergraduate)

Students enrolled in ENG 177 earn one undergraduate credit hours by focusing their efforts on term projects and interfacing with our stakeholders. You will develop your skills in stakeholder engagement, cultural intelligence, and contextual understanding of complex systems. Development of these skills leads toward resilient and sustainable design solutions in a variety of applications.




## Learning Objectives

1. Recognize the effects our actions have on other regions around the world
2. Discuss global diversity and your understanding regarding the perspectives of those of other cultures
3. Develop and practice your skills for navigating unfamiliar culture and situations
4. Development of design prototypes for within the context of a stakeholder driven engineering design process
5. Identify trends in different societies and small communities during the periods after a disaster occurs
6. Discuss the limitations to disaster resilience for vulnerable communities that may be overcome through education, engineering, and community activism efforts

# Required Materials




- This course website.
- Your laptop
- Google Drive
- Slack

The course draws from a number of texts, as well as articles and multimedia sources. The texts will be provided and include selected readings from:

- Amadei, B. (2014). Chapter 7: From Appraisal to Project hypothesis. Engineering for Sustainable Human Development: A Guide to Successful Small-Scale Community Projects. Reston, VA: American Society of Civil Engineers. <https://doi.org/10.1061/9780784413531>   
(<https://doi.org/10.1061/9780784413531>)
- Johnson, L. A., & Olshansky, R. B. (2016). After Great Disasters: How Six Countries Managed Community Recovery (No. PF041; Policy Focus Report, p. 72). Lincoln Institute of Land Policy. <https://www.lincolninst.edu/publications/policy-focus-reports/after-great-disasters>   
(<https://www.lincolninst.edu/publications/policy-focus-reports/after-great-disasters>)
- Mehelicic, F. Cowden, J. R. & Jean Charles, M. Chapter 17 Rainwater Harvesting in Mihelicic, J. R., Fry, L. M., Myre, E. A., Phillips, L. D., & Barkdoll, B. D. (Eds.). (2009). Field Guide to Environmental Engineering for Development Workers: Water, Sanitation, and Indoor Air. Reston, VA: American Society of Civil Engineers. <https://doi.org/10.1061/9780784409855>   
(<https://doi.org/10.1061/9780784409855>)
- Venator-Santiago, C. R. (2017). Yes, Puerto Ricans are American Citizens. The Conversation.
- Lloréns, H. (2014). Imaging the Great Puerto Rican Family: Framing Nation, Race, and Gender during the American Century. Lexington Books.
- Godreau, I. P. (2015). Scripts of Blackness: Race, Cultural Nationalism, and U.S. Colonialism in Puerto Rico; Introduction: Nation, Race, and Culture in the 1990s (pg 6-9), Blackness in the Non Sovereign Nation (pg 12-14), The Politics of Colonial Sovereignty: A Radicalized Domain (pg 21-26). University of Illinois Press
- Walsh, M. W. (2015). The Bonds that Broke Puerto Rico. The New York Times
- Zwillich, T. (Host and Editor). (2017, October 4). 'Disaster Capitalism' and the Attempts to Privatize Puerto Rico [Radio program]. The Takeaway. New York, NY: WNYC.

All course materials will be available to you via our course website.

# Recommended Materials

- Full Johnson and Olshansky Book: Johnson, L. A., & Olshansky, R. B. (2016). After Great Disasters: How Six Countries Managed Community Recovery (No. PF041; Policy Focus Report, p. 72). Lincoln Institute of Land Policy. <https://www.lincolninst.edu/publications/books/after-great-disasters>  [\\_ \(https://www.lincolninst.edu/publications/books/after-great-disasters\)](https://www.lincolninst.edu/publications/books/after-great-disasters)
- Full Mihelcic book: Mihelcic, J. R., Fry, L. M., Myre, E. A., Phillips, L. D., & Barkdoll, B. D. (Eds.). (2009). Field Guide to Environmental Engineering for Development Workers: Water, Sanitation, and Indoor Air. Reston, VA: American Society of Civil Engineers. <https://doi.org/10.1061/9780784409855>  [\\_ \(https://doi.org/10.1061/9780784409855\)](https://doi.org/10.1061/9780784409855)
- Full Amadei book: Amadei, B. (2014). Engineering for Sustainable Human Development: A Guide to Successful Small-Scale Community Projects. Reston, VA: American Society of Civil Engineers. <https://doi.org/10.1061/9780784413531>  [\\_ \(https://doi.org/10.1061/9780784413531\)](https://doi.org/10.1061/9780784413531)

# Basic Course Policies

There are three categories of effort that will be evaluated to determine grades in this course: participation, which includes participation, homework, and term projects. There is a late assignment policy all students should be aware of. The point distribution of your effort in this class is allocated as follows.

Grade distribution

Category	Points	Percentage
Participation	250	25%
Discussion	250	25%
Term Projects	500	50%

## Evaluation

In general, we will adhere to a standard grading scale. This course is graded out of approximately 1000 points distributed below, as follows.

### Grading Scale

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<b>A+</b>	> 98.00% (>980.0)
<b>A</b>	90.00-97.99% (900.0-979.9)
<b>A-</b>	88.00-89.99% (880.0-899.9)
<b>B+</b>	85.00-87.99% (850.0-879.9)
<b>B</b>	80.00-84.99% (800.0-849.9)
<b>B-</b>	78.00-79.99% (780.0-799.9)
<b>C+</b>	75.00-77.99% (750.0-779.9)
<b>C</b>	70.00-74.99% (700.0-749.9)
<b>C-</b>	68.00-69.99% (680.0-699.9)
<b>D+</b>	65.00-67.99% (650.0-679.9)
<b>D</b>	60.00-64.99% (600.0-649.9)
<b>F</b>	<60.00% (<600.0)

*Late Assignments (10% deducted per day, up to 50%; no assignments accepted after the 7th day)*

As our programming grows, so do our responsibilities. Delivering on those responsibilities requires efficient course management. These logistics demand that we move through assignments efficiently. Late assignments are assessed a 10% penalty, deducted from the total possible score. This penalty will be assessed up to 50% of the possible score. This penalty will be assessed on both business days and weekends. Assignments will not be accepted past the seventh day.

PLEASE NOTE: This policy applies for all homework assignments, EXCEPT your original discussion forum post, which is expected to be turned in on time to facilitate the participation of your peers. **No credit will be given for late submissions.**

## *Participation (25% of total grade, 250 points)*

Class participation will be quantitatively assessed for each individual in this class and calculated to the maximum extent possible using the following assessments. Active and sincere participation in this course is essential for its success. You will all engage with stakeholders to our projects directly and some of your classmates will eventually travel as a group to Puerto Rico and in doing so we will collectively represent the Department of Agricultural and Biological Engineering, the College of Agricultural, Consumer, and Environmental Sciences, the College of Engineering, the University of Illinois at Urbana-Champaign, the State of Illinois, and the United States of America. At any time, lack of participation by any of us will reflect negatively on not only on the individual, or our group, but also everything we represent.

Furthermore, we have a long-term commitment in this course to assess potential technological solutions that may be implemented via several follow up projects after this course is ended. Demonstrating engagement in the process early and throughout the process is essential for the general success of the class.

*Attendance and Participation:* Students are expected to arrive in class on time and stay for the entire duration. Students should actively participate in class discussions, arriving ready to participate. Active participation in class discussion requires completion reading and media provided in weekly modules before arriving in class. Points will be awarded when both active participation and prompt attendance occur. Students are expected to create a learning environment where diverse viewpoints, emotional learning, and academic discourse are respected and promoted. As the course progresses, students will be expected to contribute to facilitation and course leadership.

Our class will include several experiential opportunities (virtual or physical exchanges) where we will directly interact with our peers and stakeholders in Puerto Rico. The opportunities to engage help to embed you into the process of problem solving in the context of our collaborators, while developing your skills in cross-cultural interactions. Many of these sessions will be facilitated by our collaborating instructors. These include instructors from Amizade, a not for profit specializing in Fair Trade Learning; Caras con Causa, a not for profit specializing in community engagement through education, environmental stewardship, and economic development; the instructors and students from the University of Puerto Rico-Mayagüez and the University Institute for Community Development. Many

of these events are contained within normal class hours, but additional collaborative sessions are expected to occur in both instructor facilitated and independent fashions.

Scholarly readings, media, and recent news in Puerto Rico will provide context for achieving our learning objectives, and prepare for virtual exchange. These course offerings are chosen selectively, with the goal of introducing students to the culture of Puerto Rico, the current circumstances of our host communities, and to begin the process of considering viable potential solutions. This course assumes that each student will proactively approach readings and media critically to understand the contexts and hypothesize ideas that can be later tested in virtual exchange and eventually physically in communities.

*Group Formation and Peer Review:* Several assignments throughout the semester are group assignments (e.g. Technology Concept, Annotated Bibliography, Outlines, Poster, Final Report). You will be asked to help develop effective teams, to define what a high performance team will do to succeed, to quantitatively review the level and quality of participation of your group members at several intervals throughout the semester, and to work towards enhancing the ability for your team to succeed. Your participation in these assessments will be recorded and used to determine the quality of your participation during group activities.

## Discussion Forums (25% of total grade, 250 points)

A reflective writing assignment is included with each set of readings and other media. This will be turned in via the Discussion Board included in our Canvas website. Students will be expected to respond to the reflective writing prompt by preparing a short essay of about 250 words. Each week you will be expected to respond to two posts on the discussion forum. Generally, you respond to at least one post provided by a classmate, and if someone made a reply to your own post, you will respond to your classmate. In the event no one responded to your post, you should respond to another classmate.

Your original post will be due on a weekly basis on Wednesday 6:00 PM, your replies must be completed by Friday at 6:00 PM. Discussion forum points will be awarded according to the rubric provided.

## *Term Projects (50% of total grade, 500 points)*

In this course, you will contextually analyze the viability of one of several technological solutions that may alleviate challenges recovering from the aftermath of Hurricane Maria in Puerto Rico. You will document what you have learned and propose potential solutions for improving the sustainability of

these systems. These potential solutions will be prioritized by the class in collaboration with our collaborators. A scaffolded process is utilized to facilitate the development and review of potential solutions and information transfer across the various projects. This semester the scaffolded steps of these projects and the point allocations are as follows. This semester term projects will be implemented in assigned groups.

### Description of term project

Project Area	Description
<b>Travel Reflection</b>  <b>100 Points</b>	<p>This assignment is designed to engage you in considering our interactions with our partners within the community and the project we intend to implement. Thus, immediately after travel, and leading into this semester's project it becomes critical to consider how we engage, how we listen, and how we can show we have been successful in our collaborations.</p>
<b>Background Research</b>  <b>Term: 50 Points</b>	<p>This assignment is designed to cause you to document what you currently believe is important for disaster recovery and the current project for this course. We will provide some initiation points for your effort through stakeholder engagement and we will rely on some students in the course who are repeating the class for their additional experience. This assignment forms the basis of your process of identifying realistic opportunities for improving the state of affairs, while considering both positive and negative impacts on other sectors, and the constraints inherent with limited access to standard infrastructures and resources. This shall guide subsequent research and problem solving. You might equate this effort to an annotated bibliography that precedes a literature review.</p>
<b>Conceptual Idea and Project Outlines</b>  <b>Term: 50 Points</b>	<p>By now you and your team have identified one or more exciting opportunities for addressing the aftermath of Hurricane Maria and you have initiated your research supporting your position. This assignment is designed to outline your research objectives and methods in the form of an annotated bibliography, target milestones, system designs, reliability schematics, and presentations to your peers and collaborators. These conceptual ideas are developed early in the semester and provide a basis for considering how we may improve our ideas. Ideas continue to evolve from here.</p>

<b>Draft Project Reports</b>  <b>Term: 100 points</b>	<p>You present a draft of your project for instructor evaluation. Templates including all required sections and analysis will be provided. Examples will be provided to guide you and quality should be commensurate with stakeholder expectations. Consult your instructors for instruction, feedback, and help early on if you have any questions or concerns.</p>
<b>Near Final Project Reports</b>  <b>Term: 200 Points</b>	<p>You will present a near final draft of your project. This is a 'near final' draft as if some of your classmates have the opportunity to engage directly with our stakeholders during the optional study, then they will revise and present the final draft for this term. The purpose of these project plans is to help you communicate your ideas to those who might collaborate with you in the future. These individuals include those outside this class, but who might help you implement your project, those who might fund your project in the future, and future students in this class who will follow up on your legacy. This document will summarize your work after you have completed a semester of effort on this topic.</p>

### *Extra Credit (50 points)*

Each semester there is an opportunity to earn extra credit. This course fits in as a component for a variety of projects targeting disaster relief and resilience for our partner communities. Thus, to facilitate and support this process, we ask you to complete several forms and complete several surveys. Completion of these documents is remunerated to you with extra credit. A total of 50 points or 1/2 of a letter grade of extra credit is available.

## Standards of Professional Behavior

- Turn off your cell phone at the start of every class and during key events in Puerto Rico. Any exceptions require instructor approval.
- Critical thinking is expected and discussions reflect individual investment. Keep criticisms issue-based and factual. Personal attacks are not tolerated under any circumstances.
- Energy! We are actively working in each class period. You should arrive ready to work. Get your rest the night before. Stay up to date on your assignments.

## Academic Integrity

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/> (<http://studentcode.illinois.edu/>).

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <http://studentcode.illinois.edu/> (<http://studentcode.illinois.edu/>).

Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

## Special Considerations: Caring for your health and safety

### *Diversity and Integration Statement*

The Instructional Team is committed to the creation of a fully inclusive community that welcomes diversity and encouraged integration along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender and gender identity, sexuality, disability status, class, age, or religious beliefs. We especially recognize that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous voices and contributions have largely either been excluded from, or not recognized in, food, agriculture, or society writ large, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community. Indeed, the effectiveness of this course is dependent upon each of us fostering the creation of a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to the Bias Assessment and Response Team (BART) (<https://bart.illinois.edu/>). Based on your report, BART members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.

### *Students with Disabilities*

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor as soon as possible. To ensure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should contact Disability Resources and Educational Services (DRES) (<http://www.disability.illinois.edu/>) and see the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to see me, or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TDD), or e-mail a message to [disability@illinois.edu](mailto:disability@illinois.edu).

## *Additional Statement on Accessibility during COVID-19*

This semester presents new challenges for all of us, and many students may not know right away how COVID-19 requirements and procedures may affect their classroom experience. I am committed to working with you to create a rigorous and flexible space for learning. If at any time you are experiencing difficulty in any aspect of this course due to social distancing and the mandatory wearing of face coverings, you are welcome to share your concerns with me. Please note that you never need to share diagnosis or medical information with me. The staff members with Disability Resources and Educational Services and the Office for Access & Equity are also available to provide guidance and advice if you have questions or concerns related to a visible or invisible disability.

- Disability Resources and Educational Services ([disability.illinois.edu](http://www.disability.illinois.edu/) (<https://www.disability.illinois.edu/>))
- Office for Access & Equity ([oae.illinois.edu](http://www.oae.illinois.edu) → ([https://urldefense.proofpoint.com/v2/url?u=https-3A\\_\\_oae.illinois.edu\\_index.html&d=DwMFaQ&c=OCIEmEwdEq\\_aNIsP4fF3gFqSN-E3mlr2t9JcDdfOZag&r=IOPwVePTP\\_7403nZBuL3vFwdl4NH5FBGTZHVUqWLC1l&m=b3xC\\_U6Zcd-ToLySLLNTq0yc5W5vOAb14os2vQIGCIA&s=p4XbAREdNWkxJde0YBQsLSf9WEiGpmDIqcX4Flts\\_Cc&](https://urldefense.proofpoint.com/v2/url?u=https-3A__oae.illinois.edu_index.html&d=DwMFaQ&c=OCIEmEwdEq_aNIsP4fF3gFqSN-E3mlr2t9JcDdfOZag&r=IOPwVePTP_7403nZBuL3vFwdl4NH5FBGTZHVUqWLC1l&m=b3xC_U6Zcd-ToLySLLNTq0yc5W5vOAb14os2vQIGCIA&s=p4XbAREdNWkxJde0YBQsLSf9WEiGpmDIqcX4Flts_Cc&)))

## *Emergency Response Recommendations*

Emergency response recommendations can be found at the following website:

<http://police.illinois.edu/emergency-preparedness/> (<http://police.illinois.edu/emergency-preparedness/>). I encourage you to review this website and the campus building floor plans website within the first 10 days of class: <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/> (<http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>).

## *Family Educational Rights and Privacy Act (FERPA)*

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> (<https://registrar.illinois.edu/academic-records/ferpa/>) for more information on FERPA.

## *Sexual Misconduct Policy and Reporting*

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: [wecare.illinois.edu/resources/students/#confidential](https://wecare.illinois.edu/resources/students/#confidential) (<https://wecare.illinois.edu/resources/students/#confidential>).

Other information about resources and reporting is available here: <http://wecare.illinois.edu> (<http://wecare.illinois.edu/>).

## *Counseling and Personal Concerns*

Successfully negotiating the demands of undergraduate classes, work, and life requires consistent attention. It's okay to seek professional help, and you just may acquire skills that will benefit every area of your life. The [University of Illinois Counseling Center](http://www.counselingcenter.illinois.edu/) (<http://www.counselingcenter.illinois.edu/>) offers comprehensive services ranging from self-help materials to individual and couples counseling and suicide prevention, and features same-day appointments at no cost to you. Take advantage of them at before you get in over your head.

## Course Summary:

Date	Details	Due
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