



Opportunities for Cooper Union Student Summer Projects in Guatemala in 2022

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Strong Connection with Guatemala

- The Sisters of Charity of New York have served in Guatemala since 1971
- The ministries in Guatemala have partnered with US universities on engineering and medical projects and welcome partnership with Cooper Union
- Three students had a terrific time there in the summer of 2020 doing projects that combined their expertise with the local needs



Sisters of Charity Missions in Guatemala

- A ministry presence for nearly 50 years
- Santa Cruz del Quiche
 - Barbara Ford Peace Building Center
 - Supported missions – schools, farms, nursing home
 - 100km from Guatemala City (~3.5 hours)
- Novillero in Solola department
 - Medical center with housing for visitors (historically missionary doctors)
 - Supports 3 other medical centers in nearby towns
 - 80km from Guatemala City (~3 hours)





THE COOPER UNION

The Barbara Ford Peace Building Center

- Founded in 2009 in memory of Sister Barbara Ford, murdered in Guatemala City May 5th, 2001.
- www.cenpaz.org and <https://vimeo.com/489887446>
- 50-acre campus
 - Administrative buildings
 - Hotel
 - Restaurant
 - Farm
 - Eco-trail
- Three categories of programs
 - Health
 - Entrepreneurship
 - Human rights
- “Home base” for Cooper Union projects



Barbara Ford Center - Facilities

- Conference Center
 - 100-pers on conference room
 - Two meeting rooms for 10-15 people
- Offices in administration bldg.
- Restaurant
 - 100-person capacity
- Hotel with 60 beds
- Model farm
 - originally instituted by Save the Children to develop techniques for affordable small-scale agriculture to improve the diet of indigenous people in the surrounding area
- Beekeeping equipment



Barbara Ford Center - EE projects



- Power improvements for campus
 - Several buildings spread across 50 acres
 - Tied to local grid but electricity is expensive with periodic outages
 - Build on work of Joya Debi (EE '23)



Joya Debi (EE '23) and the solar meter



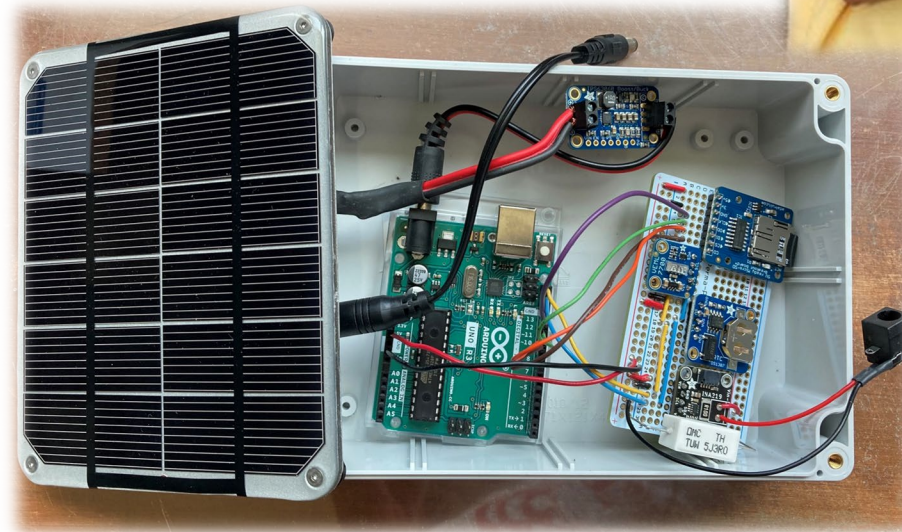
Cooper students working in office



Joya Debi (EE '23)
measuring batteries

EE Project for Spring 2022

- Improved solar meter design
 - Used to determine local solar insolation levels
 - Two are in Guatemala, but had flaws
 - Features to add:
 - Water resistance
 - Wireless data downloads
 - Battery recharging



Barbara Ford Center- EE and MechE projects



- Solar power for drip irrigation systems at remote fields (off-grid)
 - Just completing a 3-year project, “Mas Riego,” with USAID and UC San Diego to introduce drip irrigation and other techniques to local farmers
 - Many fields are off-grid
 - MIT was considering a solar-powered irrigation project
- Fish farm water temperature regulation
- Greenhouse temperature regulation
- Translation software
 - US and international grant applications are processed in English



Farmer Fernando with Sr. Eileen Judge, Otto (BF Center), Matthew Leach (MechE '24), Espin (BF Center), and Carolina (regional “Mas Riego” project director)

Barbara Ford Center-CE, ChE, BSE projects



- Water reduction and conservation
 - Water pumps: largest source of electricity consumption
 - Rainwater collection feasibility study
 - Solar water heating
- Organic waste
 - Seena Seon (ChE '23) and Brandon Bunt (BSE '22) examined waste production and recycling
 - Developed a proposal for turning waste into biochar
 - More work could be done in t
- Other projects possible
 - Based on student interest
 - And client needs
 - Real-world engineering!

