

# OPEN TO ALL ENGINEERING STUDENTS!

## Materials for Biomedical Devices

Barcelona and Seville, Spain

June 5-18, 2017

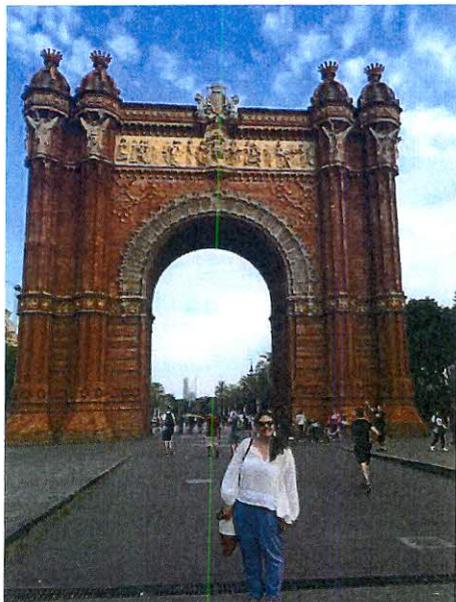
Students will receive **3 credits** of MSE 497 for this course, which focuses on how materials science is integrating with biology to lead to medical devices. Lectures will be taught during weekday mornings and visits to local laboratories and the IBEC Institute for Bioengineering in Catalonia will be featured.

**Eligibility:** Must be at least a finishing sophomore in Engineering, Science, or other related major. All acceptance decisions will be made by Dr. Stanciu. Students must be in good academic standing.

**Estimated Costs:** \$2800 Price includes housing, 3 credits, ground transportation, some meals, and excursions. Additional costs: Air ticket, travel documents, some meals and spending money. **Students may also apply for the Purdue Moves Scholarship for \$1,000 of additional funding.**

*Please direct all academic questions to Prof. Lia Stanciu [lastanciu@gmail.com](mailto:lastanciu@gmail.com)*

*Please direct all questions regarding costs, travel, registration, etc. to [churchil@purdue.edu](mailto:churchil@purdue.edu)*



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# Global Medical Device & Design- Ireland

**Biomedical Engineering and EPICS: Global Medical Device & Design**  
**A Global Perspective on Ethical, Regulatory, and Social Impact on Design of Medical Technology**



**May  
2017**



**Earn 3 Credits for BME 495 or EPICS 490**

Approximate cost \$2500 plus air, travel documents, some meals, and spending money

**Eligible students will receive \$1000 Purdue Moves Scholarship, undergraduates only**

Open to rising sophs-seniors in BME, ME, & EPICS GDAT team and other EPICS teams approved by the program leaders.

Join Carla Zoltowski , Corey Linkel, and Andrew Pierce as they lead you through Ireland including, Dublin, Cork, Killarney, Galway, and Belfast, Northern Ireland.

**Course Topics: Global Perspectives on Design, Engineering Worldviews, Empathy and Engineering Design, Global Ethical Perspectives, and Regulatory Issues in Medical Products.**

Meet and work with students and faculty from the National University of Ireland, Galway.

Industry visits: Cook Biotech, Hollister Medical, Irish Medical Device Association, and others.

Cultural Tours: Ring of Kerry, Blarney Castle, Trad on the Prom Dance, Ceide Fields, and more.

Contact Carla Zoltowski at [czb@purdue.edu](mailto:czb@purdue.edu), Corey Linkel at [linkel@purdue.edu](mailto:linkel@purdue.edu), Andrew Pierce at [pierce1@purdue.edu](mailto:pierce1@purdue.edu)  
For questions on payment, registration, travel logistics, or visas contact Jill Churchill at [churchil@purdue.edu](mailto:churchil@purdue.edu)

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# Student Design Experience in India

ME and EPICS

Earn 3 credits for ME 497 or EPICS 490

**Spring Break 2017-March 10-19, 2016**

**Cost will be approx. \$1,150 (if you are eligible to receive the \$500 Purdue Moves Scholarship)**

Price includes: Group flight, housing, most meals, 3 credits, excursions, and ground transportation to and from O'Hare. **Additional expenses: a few meals, visa, immunizations, passport, and spending money.**

\*\*If you have already used your \$500 scholarship, the cost will be approx. \$1650 + expenses listed above.

The program will begin in Chennai, India where you will visit the Bay of Bengal, and other cultural sites. You will visit the Chennai campus of the Vellore Institute of Technology (VIT) and meet with students. Then on to Vellore and the main campus. For several days you will work with VIT students on design projects and community work while visiting sites like the Golden Temple.

Students will be exposed to the higher education system in India while working with VIT students to use engineering design principles to deliver solutions to the community partners in Vellore. Students will also gain an appreciation for the growing high tech industry in India.

Open to Freshman-Juniors in Engineering.

For questions on course content or eligibility contact: Program Leaders George Chiu [gchiu@purdue.edu](mailto:gchiu@purdue.edu) and Maeve Drummond [maeve@purdue.edu](mailto:maeve@purdue.edu) For non-academic questions on costs, scholarships, travel, visas, passports, etc. contact Jill Churchill in Global Engineering at [churchil@purdue.edu](mailto:churchil@purdue.edu)



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Spend  
Maymester  
in China

Earn 3 Credits

\*Counts as a Tech  
Elective in ME

May 10-24

Reduced  
Program Cost:  
Now \$2295

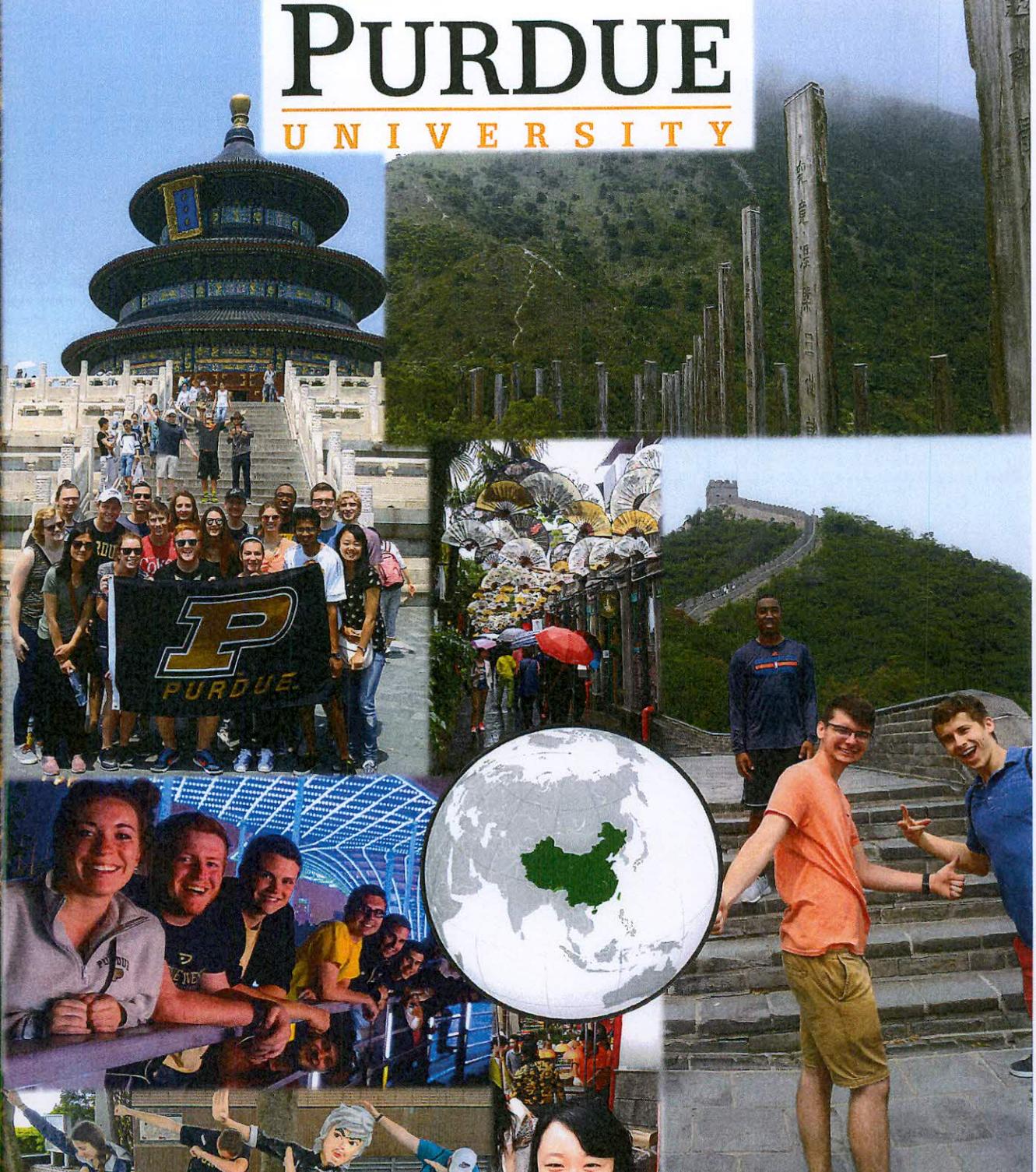
\*after \$1000 Purdue  
Moves Scholarship  
and SAIL Grant!

Visit:  
Hong Kong  
Beijing  
Shanghai  
Harbin

Email:  
[mlinnes@purdue.edu](mailto:mlinnes@purdue.edu)

Apply:  
[tinyurl.com/  
ChinaMaymester](http://tinyurl.com/ChinaMaymester)

Deadline:  
January 2017



# Sustainability Across Sectors- Sweden

Stockholm, Sweden

May 13-26, 2017

Sweden is ranked 9<sup>th</sup> in the world on the Environmental Performance Index, which reflects on how the country performs in areas such as environmental health and ecosystem vitality. Stockholm is world famous for its stunning beauty. The city sits on 14 islands, is surrounded by water and has parkland, forest, and lakeshore beaches.



Purdue is partnering with KTH, the Swedish Royal Institutes of Technology, in Stockholm for this program. You will receive lectures from KTH faculty and the Swedish EPA, visit city hall where the Nobel Prize dinners are held, industry visits, and tour water treatment and waste-to-energy facilities. Students will tour Arlanda Airport, as well as cultural sites: Old Town, Parliament, Vasa Museum, and the Nobel Prize Museum.



**Estimated Costs:** \$2,600, which includes housing, excursions, ground transportation, breakfast daily, 2 dinners, 3 credits, and insurance. **All eligible Purdue undergraduates will receive the \$1,000 Purdue Moves Scholarship toward their program costs**

**Additional Expenses:** Airfare (est \$1200) meals, and personal spending money, passport and Visa if necessary.

\*Non-US Citizens may need a visa, and will have to travel to Washington DC or Los Angeles to submit applications.

Earn 3 credits for CE 497 or EEE 495.



**Eligibility:** Rising Sophomores through seniors in Engineering. Consideration will be given to related non-engineering majors as approved by the program leader. Min GPA 3.0 or as approved by Dr. Hua.

Contact Dr. Inez Hua, [hua@purdue.edu](mailto:hua@purdue.edu), with academic questions or Jill Churchill, [churchil@purdue.edu](mailto:churchil@purdue.edu), with questions regarding travel, costs, or registration.

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# 21<sup>ST</sup> Century European Transportation Study Abroad 2017

## Information Meeting: November 3, 2016 from 5:00 -6:00 p.m. in ARMS 1103

This Spring 2017 Maymester class will provide students with active learning experiences to introduce them to various types of European transportation infrastructure and systems. Students will start the trip in London with a visit to the € 2 Billion Crossrail project. They will travel to Graz to visit tunnel construction sites and Hamburg to visit the Airbus A380 final assembly line. Students will tour commercial airports, as well the historic Tempelhof Airport used during the Berlin Airlift. Cultural sites will be highlighted in each city.

### Destination Cities

- London
- Hamburg
- Berlin
- Graz
- Vienna



May 7 – May 19, 2017



### Estimated Program Cost

\$2,400 Estimated Program Fee includes

- Site visits, tours, and technical activities
- Lodging and travel within Europe
- Selected cultural excursions & approximately 16 meals

\$335 Study Abroad Fee + Insurance

\$1,200 International Airfare

**\$3,935 Total Estimated Cost**

**-\$1,000 less Purdue Scholarship**

**\$2,935 Net Cost + personal expenses/some meals**

### Additional Information

- Enrollment is limited to 20 students
- Preference to upperclass students
- Underclass students as space allows
- Program Fee will be finalized by 2/1/2017

For more information, contact:

Professor Darcy Bullock  
Civil Engineering  
[darcy@purdue.edu](mailto:darcy@purdue.edu)

# Introduction to Machine Learning and Pattern Recognition

PURDUE  
UNIVERSITY.

## Barcelona and Seville, Spain

May 8-June 2, 2017



**Earn credit for ECE 30010.** This course is designed for students in Engineering, MGMT, Finance, Science/Technology, Agriculture and other related majors. Students may use this 3-credit course to count toward their plan of study.

**Eligibility:** Students must have at least finished their sophomore year by the beginning of the program.

**Estimate Costs:** \$2,800. This includes housing, 3 credits, cultural events, breakfast, insurance and ground transportation, and several meals. This does not include airfare, some meals, travel documents, or spending money. **Students may also apply for the Purdue Moves Scholarship for \$1,000 of additional funding.**

Contact Dr. Okan Ersøy, [ersoy@purdue.edu](mailto:ersoy@purdue.edu), or Jill Churchill, [churchil@purdue.edu](mailto:churchil@purdue.edu), with any questions

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Belgium, 10-19 March 2017

## Uncertainty Quantification in Fluid Dynamics

Broad orientation on uncertainty quantification (UQ), in computational fluid dynamics and experimental data. Traditional and advanced measurement techniques; rigorous methods to characterize the uncertainty originated from experimental data collection; UQ in computational fluid dynamics. This course will consist of lectures, computer demos, and a project to be performed in small teams. Outside of classes, students will explore Brussels, the city of Bruges, beer museum, the European Space Agency in Noordwijk, Netherlands, and spend a free day exploring Amsterdam.

**Eligibility:** Finishing sophomores, juniors, and seniors in any engineering school who have completed ME 309 or the equivalent.

**Three credit technical elective** for ME (ME 497) all other schools will need to check with their academic advisor as to how this can be used in their plan of study.

**Estimated Cost: \$1772 with \$500 Purdue Moves applied-** **Includes: Group flight, housing, daily breakfast, 4 lunches, ground transportation, 2 dinners, excursions, and Insurance.**

**Additional costs:** Travel documents, meals, and personal spending money.

**\$500 Purdue Moves Scholarship available to all eligible students.**

### Proposed Itinerary:

**March 10:** Depart Purdue, shuttle to O'Hare, group flight to Brussels.

**March 11:** Arrive in Belgium, City tour, and Welcome Dinner

**March 12:** Tour Bruges including the channels and a beer museum

**March 13-16:** Course and project on uncertainty quantification in exp-CFD at the Von Karman Institute- All Day, evenings free

**March 17:** Visit the European Space Agency, Noordwijk Netherlands. Night in Amsterdam

**March 18:** Visit Amsterdam, free day, Farewell dinner

**March 19:** Return to USA from Amsterdam



Brussels, Belgium



Canals of Bruges, Belgium



Amsterdam, The Netherlands

**Program Leader:** Prof. Guillermo Paniagua  
[gpaniagua@purdue.edu](mailto:gpaniagua@purdue.edu)

**Questions on payments, scholarships, travel contact:** Jill Churchill [churchil@purdue.edu](mailto:churchil@purdue.edu)

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# GLOBAL DESIGN TEAMS

## ARE YOU READY TO SOLVE GLOBAL DESIGN CHALLENGES?

Global Design Teams (GDTs) engage students, faculty, and international collaborators in community-based research and development projects. You'll engage in cross-cultural interaction and practical design experience. And you'll address real-world challenges- from inception to scalable worldwide impact.



## WHAT ARE THE CHALLENGES ADDRESSED?

- Water
- Healthcare
- Construction
- Energy
- Mechanization



## WHAT ARE THE BENEFITS TO MY FUTURE CAREER?

- Apply your knowledge and skills toward your degree
- Real-world experiences solving global development challenges
- Opportunities for worldwide impact
- Enhanced resume through problem-solving with international teams



## WHAT IS YOUR NEXT STEP?

Make an appointment with the Office of Global Engineering Programs (GEP)  
Visit: Wang 4500  
Online: [www.engineering.purdue.edu/GEP](http://www.engineering.purdue.edu/GEP)  
Email: GEP@purdue.edu



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Our **Global Design Teams (GDTs)** are looking for you. We want undergraduate and graduate students from all disciplines. You'll work with faculty and community-based organizations. This is your opportunity to engage in projects that promote sustainable development through capacity building, innovation, and long-term partnerships.

Students are recruited for a semester of service on a GDT to collaborate with international partners in a credit-bearing design experience. Opportunities for travel may exist, depending upon the requirements of the project. Opportunities for involvement may exist year-round.

## WATER

### WATER TREATMENT TECHNOLOGIES

#### COLOMBIA

**Partners:** Community educators in Barbosa, Antioquia, Colombia

**Project:** The team designed and implemented a method for water purification using slow sand filtration. Research continues on disinfection methods and economical design production.

#### KENYA

**Partner:** Moi University

**Project:** The team developed, tested, and installed a reactor to disinfect and remove fluoride from the water supply to provide potable water for a school in Eldoret, Kenya.

## RESOURCE ASSESSMENT

#### TANZANIA

**Partner:** Catholic Relief Services (CRS)

**Project:** The team is working on the design of an earthen dam and complementary water treatment system to provide water for agricultural and potable purposes for a community in rural Tanzania.

## HEALTHCARE

### RURAL HEALTHCARE TECHNOLOGIES

#### ECUADOR

**Partner:** Timmy Global Health

**Project:** The teams worked to develop a portable and rugged fetal heart rate monitor for use in rural Ecuador. They also offered solutions for transporting computer equipment in conditions of the Amazon.

#### TANZANIA

**Partners:** The St. Luke Foundation/ Kilimanjaro School of Pharmacy in Tanzania and Howard University

**Project:** The team is working to assemble high-performance liquid chromatography (HPLC) units and develop a counterfeit drug detection method.

## CONSTRUCTION

### COMMUNITY CENTER

#### ECUADOR

**Partner:** FEVI (a non-profit organization dedicated to intercultural education and community service).

**Project:** The team worked to upgrade an existing educational facility in the indigenous community of Lumbisi, Ecuador. The long-term goal is to design and construct a new community center that provides additional classroom space for the children of the community.

## ENERGY

### HYDROPOWER

#### CAMEROON

**Partner:** African Centre for Renewable Energy and Sustainable Technology (ACREST)

**Project:** The team designed and implemented a 60 kW micro-hydroelectric turbine to supply an off-the-grid village in rural Cameroon with clean, renewable energy. They will continue research on turbine optimization, civil works, power distribution, economic assessment, and social impact related to this energy scheme.

## MECHANIZATION

### TECHNOLOGIES

#### CAMEROON

**Partner:** African Centre for Renewable Energy and Sustainable Technology (ACREST)

**Project:** This team aims to design and fabricate utility vehicles for rural Cameroon. This practical utility platform (PUP) offers opportunities throughout Africa for affordable and sustainable labor-saving mechanization, tillage, planting, harvesting, food processing, and transportation of products and people.

## CONTACT US

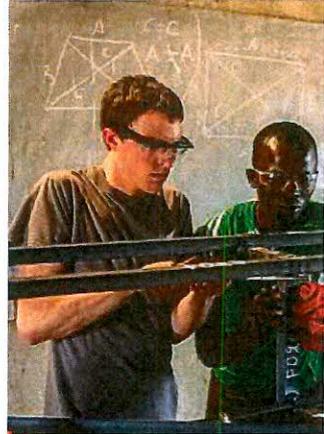
Office of Global Engineering Programs  
Seng-Liang Wang Hall, Suite 4500  
765-496-8304  
GEP@purdue.edu

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# INNOVATION FOR INTERNATIONAL DEVELOPMENT (I<sup>2</sup>D) LAB

*Putting engineering innovations to work for global sustainable development*



In 2015, countries adopted 17 UN Sustainable Development Goals to end poverty, protect the planet, and ensure prosperity for all. Engineering selection, adaptation, and invention is central to all 17, as "...the single most important reason why prosperity spread, and why it continues to spread, is the transmission of technology and ideas underlying them." (Sachs, 2005)

Purdue University is uniquely capable of advancing these goals, as a world-class research university in Indiana known for discoveries in science, technology, engineering, and more. It boasts three top-ten ranked colleges, along with Discovery Park, the \$1+ billion hub for interdisciplinary research.

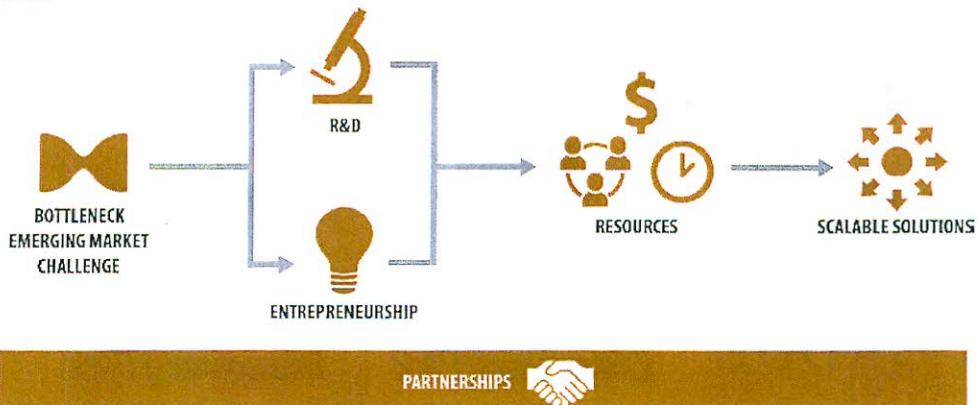
The Innovation for International Development (I<sup>2</sup>D) Lab was thus founded to convene and catalyze consortia matching world-class capability with the most pressing global challenges. In the words of Leah H. Jamieson, The John A. Edwardson Dean of Engineering, "The I<sup>2</sup>D Lab captures the essence of the Purdue Engineering Strategic Plan: students effective in a global context, research of global significance, empowering our people, enriching our culture, expanding our notion of community to include not only our role in the state, but in the global community." A growing endowment helps support I<sup>2</sup>D's mission.



For sustainable success, I<sup>2</sup>D insists on market-based approaches, diverse collaboration, and scalability. Already, a low-cost medical diagnostic innovation has garnered a Bill & Melinda Gates Foundation Grand Challenges Exploration grant. A revolutionary supply chain and logistics system is being developed for partner Catholic Relief Services (CRS). The Purdue Utility Platform (PUP), a widely affordable highly capable vehicle, has spun off a company and received several African orders. In summer 2016, I<sup>2</sup>D co-hosted 25 business leaders and entrepreneurs through the Mandela Washington Fellowship for Young African Leaders.



Our mechanisms include the award of internal seed grants, external grant writing, program development and management, and capacity building. Our model is below, and details are on the reverse.





## I<sup>2</sup>D LAB—SUPPORTED PROJECTS

### WATER AND SANITATION

**SLOW SAND FILTERS** Kenya, Tanzania, China, India, Colombia – Jafvert (CE/EEE) & Howarter (MSE/EEE) – Maji Safi International

**SOLAR UV DISINFECTION** Dominican Republic – Blatchley (CE), Applegate (Food Sci.), & Camp (Comp. Pathobiology) – Las Cañas

**WATER ACCESS TO EMPOWER RURAL (WATER) TANZANIA** Tanzania – Merwade (CE) – Nelson Mandela African Institute of Sci & Tech

### HEALTHCARE

**COUNTERFEIT DRUG DETECTION** Tanzania – Byrn (Pharmacy) & Clase (PPI/ABE) – Kilimanjaro School of Pharmacy

**ULTRA-LOW-COST PAPER-BASED NUCLEIC ACID DIAGNOSTIC PLATFORM** Kenya – Linnes (BME) – AMPATH

**CELLPHONE-BASED DETECTION OF HIV DRUG RESISTANCE** Kenya – Yuan (ChemE) and Liu (ChemE) – AMPATH

### FOOD SECURITY

**LOW-COST GRAIN MOISTURE SENSOR NETWORKED TO SMARTPHONES** Colombia – Ileleji (ABE) & Lu (ECE) – Universidad de Los Andes

**INDOOR AIR POLLUTION** Kenya – Boor (CE) & Wells (HHS) – Moi University

### ENERGY

**HYBRID RENEWABLE ENERGY SYSTEMS** Cameroon – Chen (ME) – ACREST

### EDUCATION

**ENGINEERING SKILLS CURRICULUM AND DIGITAL MATERIALS FOR OUT-OF-SCHOOL YOUTH** Kenya – DeBoer (ENE) – Tumaini Center

### LABOR-SAVING INNOVATIONS

**PURDUE UTILITY PLATFORM** Cameroon, Uganda, Guinea – Lumkes (ABE) – ACREST

### HUMANITARIAN RESPONSE

**EARTHQUAKE-RESILIENT CONSTRUCTION USING LOCAL MATERIALS** Nepal - Irfanoglu (CE) & Pujol (CE) – Catholic Relief Services

**HUMANITARIAN RESPONSE AND SUPPLY CHAIN MANAGEMENT** Nepal - Yih (IE) – Catholic Relief Services

## PARTNERS, AFFILIATIONS, AND GRANTORS



IPIA



CGFS



BDMCE



IPPH

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