



Rensselaer

why not change the world?®

ECSE

Department of Electrical, Computer, and Systems Engineering
at Rensselaer

ECSE Arch Discovery Day

John Wen, Head, ECSE

Agung Julius, Professor, ECSE

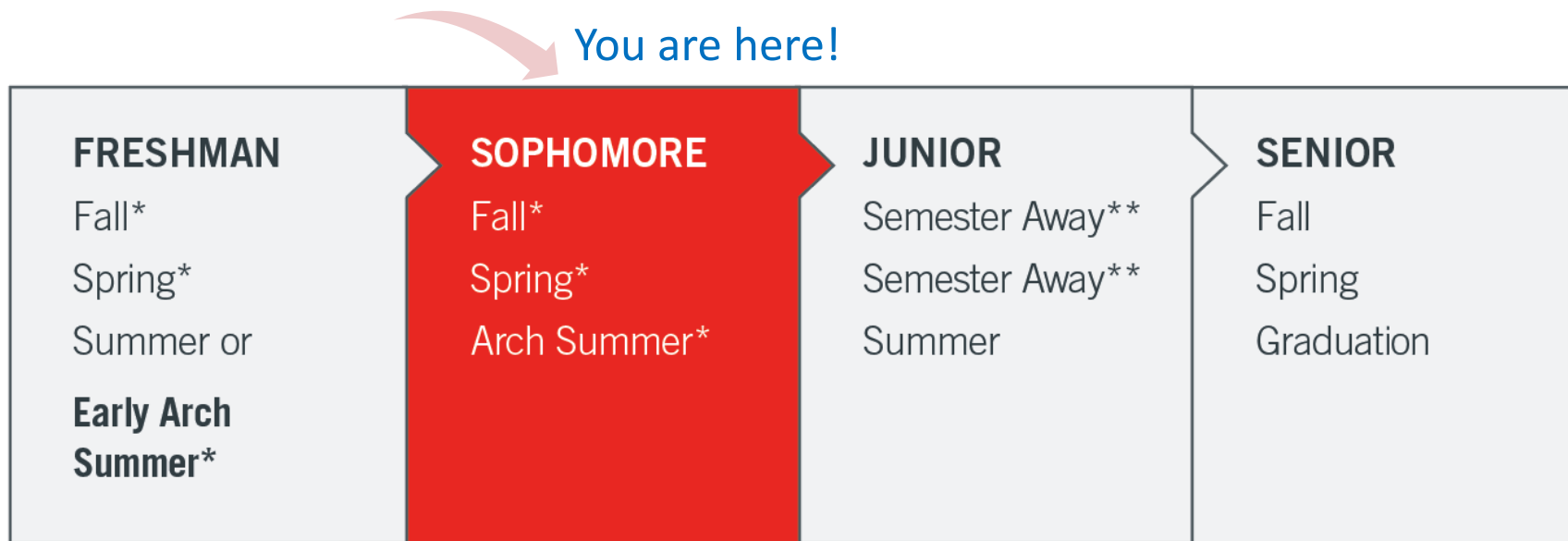
Rama Hamarneh, Sr Student Coordinator

8/31/22

Agenda

- Arch summer courses (start planning now!)
- Semester away (start planning now!)
- Beyond Arch
- ECSE Student Experiences
- Q&A
- Pizza!

Your RPI Path



***On-campus housing required.**

****Juniors must participate in a fall or spring semester away experience following The Arch summer semester.**

Note: This is a general academic overview and may vary based on academic curriculum.

Electrical Engineering Template

		Second Year				
ECSE-2610	Computer Comp. & Operations	4		ECSE-2010	Electric Circuits ⁸	4
PHYS-1200	Physics II	4		ECSE-2500	Engineering Probability ⁸	3
MATH-2400	Intro. to Differential Equations	4		MATH-2010	Multivariable Calc & Matrix Algebra	4
	Hum., Arts or Soc. Sci. Elective	4			Hum., Arts or Soc. Sci. Elective	4
ARCH SEMESTER			Third Year	Fall or Spring		
ECSE-2110	Electrical Energy Systems	3		ECSE-2050	Intro. to Electronics ⁸	4
ENGR-2050	Introduction to Eng. Design	4		ECSE-2100	Fields and Waves I ⁸	4
STSS-4100	Prof Devt- Tech Issues & Solutions ^{1,3}	2		ECSE-2410	Signals and Systems ⁸	3
	Hum., Arts or Soc. Sci. Elective	4		ECSE-2900	ECSE Enrichment Seminar	1
	Free Elective ²	3-4			Math/Science Elective ⁷	4

Computer & Systems Engineering Template

Second Year					
ENGR-2350	Embedded Control	4	ECSE-2010	Electric Circuits ⁸	4
CSCI-2200	Foundations of Comp. Science	4	CSCI-2300	Intro to Algorithms	4
MATH-2400	Intro. to Differential Equations	4		Science Elective	4
PHYS-1200	Physics II	4		Hum., Arts or Soc. Sci. Elective	4
ARCH SEMESTER			Third Year	Fall or Spring	
ECSE-2660	Cptr Arch, Nets, & Op Sys	4	ECSE-2050	Intro. to Electronics ⁸	4
ENGR-2050	Intro. to Engineering Design	4	ECSE-2410	Signals & Systems ⁸	3
MATH-2010	Multivar Calc & Matrix Algebra	4	ECSE-2500	Engineering Probability ⁸	3
	Hum., Arts or Soc. Sci. Elective	4	ECSE-2900	Enrichment Seminar	1
			STSS-4100	Prof Devt- Tech Issues & Solutions ^{1,3,4}	2
				Hum., Arts or Soc. Sci. Elective	4

Program Templates and more details...

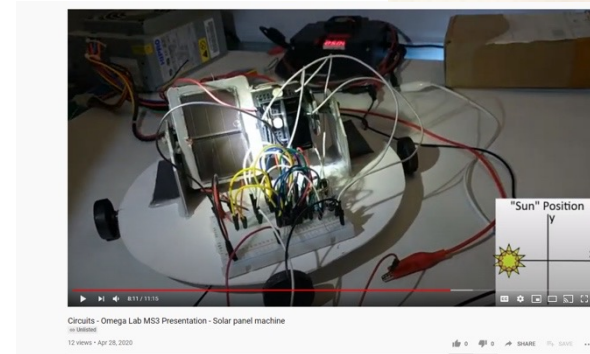
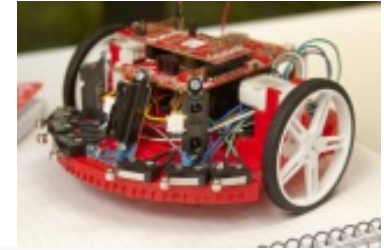
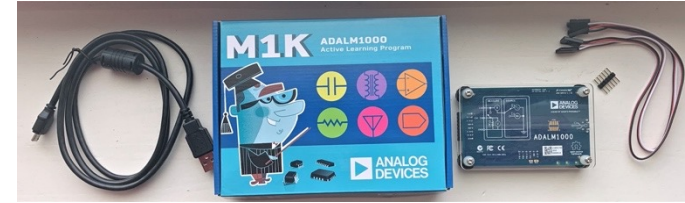
Templates, as well as more details about the curriculum can be found on our website:



<https://ecse.rpi.edu/academics/undergraduate-programs/program-templates>

Arch Summer

- Draw on your lab and project experience in Intro to ECSE, Embedded Control, and Electric Circuits for design ideas and implementation in Introduction to Engineering Design (IED).
- Arch semester courses are 12 weeks (instead of 14) – important to keep pace, seek help from Prof, TA, ALAC early!



ECSE Student Arch Experiences

ECSE Arch Summer Experience

Joshua Pratt

Dual Electrical Engineering and Computer and Systems
Engineering
Class of 2024

Om Anavekar

Dual Computer and Systems Engineering and Computer
Science
Class of 2024

Project Portfolio



PORTFOLIO

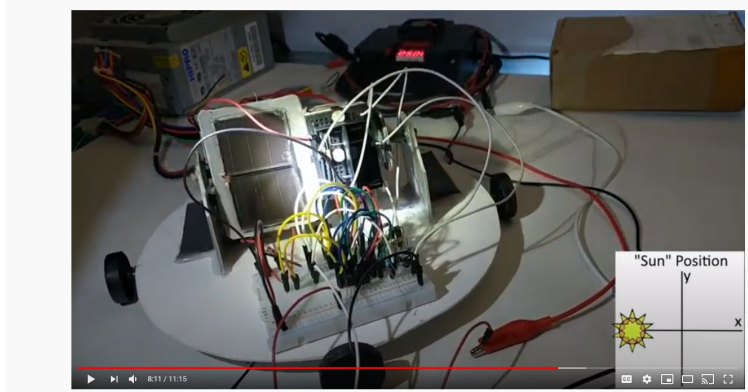
BEYOND GPA

Learn to represent yourself and your demonstration of expertise! Develop a portfolio!

Examples of Student Portfolios

- Om Anavekar
 - <https://omanavekar.wixsite.com/ommakes/portfolio>
- Joshua Pratt
 - <https://www.joshuapratt.net/>
- Colin Kilburn
 - <https://colinkilburn.wordpress.com/>
- George Rizos
 - <https://georgerizos.com/projects>

YOUR FUTURE...Omega Lab example videos



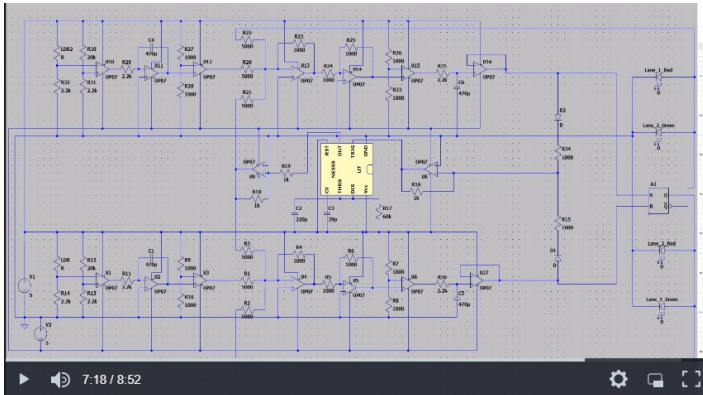
Circuits - Omega Lab MS3 Presentation - Solar panel machine
by Unlabeled

12 views · Apr 28, 2020

Like 0 Dislike 0 Share Save ...

Solar Panel Machine

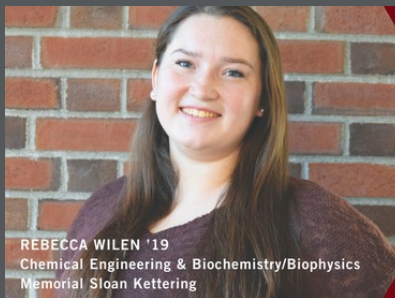
<https://www.youtube.com/watch?v=YMIAvf18cgs>



Smart Traffic Light

https://ecse.rpi.edu/~ssawyer/CircuitsSpring2020_all/Labs/OmegaLab_SmartTrafficLights/OmegaLab_SmartTrafficLights.html

Semester Away



REBECCA WILEN '19
Chemical Engineering & Biochemistry/Biophysics
Memorial Sloan Kettering

“Working in a hospital, rather than an academic lab, has given me a chance to see firsthand the life-changing effects of the treatments we are developing.”



PETER D'ALMEIDA '19
Biomedical Engineering
University of New South Wales

“Studying abroad gave me the opportunity to visit so many unique places and appreciate what this earth has to offer.”

Semester Away

- Internships/Co-ops



CCPD

- Civic Engagement

- RPI Research Opportunities



**Office of
Undergraduate
Education**

- Study at Another Institution

- Self-Design (career, leadership, sports, traditional)

- Study Abroad / International Experience



**Office of International
Programs**

Internship/Co-op

- Visit CCPD!
- Join Handshake
- Put together a resume
- Put together a portfolio (collection of your accomplishments, e.g., course/hobby projects)
- Attend on campus career fairs
- Join CCPD Discord Channel
- Attend CCPD Workshops
- See Opportunities Posted in ECSE Weekly Bulletin
- Join ECSE Industry Adviser Program
- Join professional networking sites (LinkedIn)



 **Handshake**



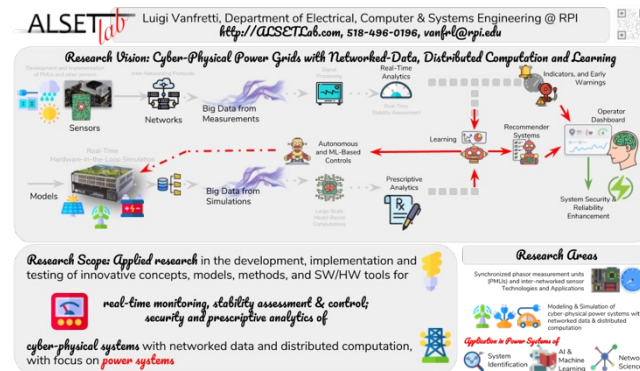
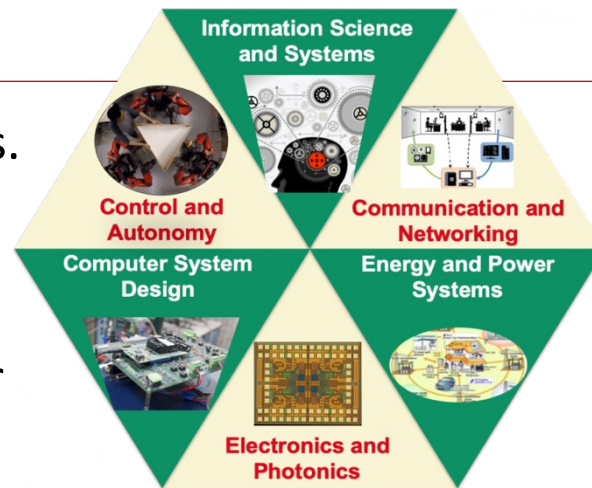
Remember: companies know you are still learning – they will train you.
They want to see your eagerness to learn and willingness to grow.

Where Do ECSE Students Go?

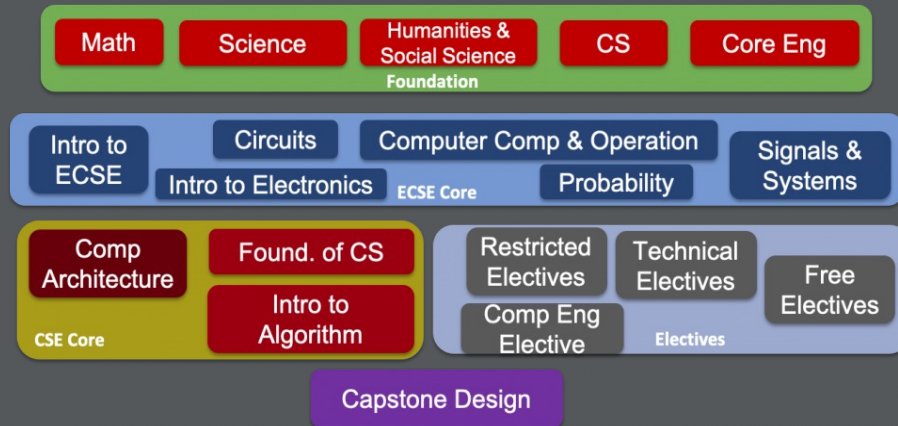
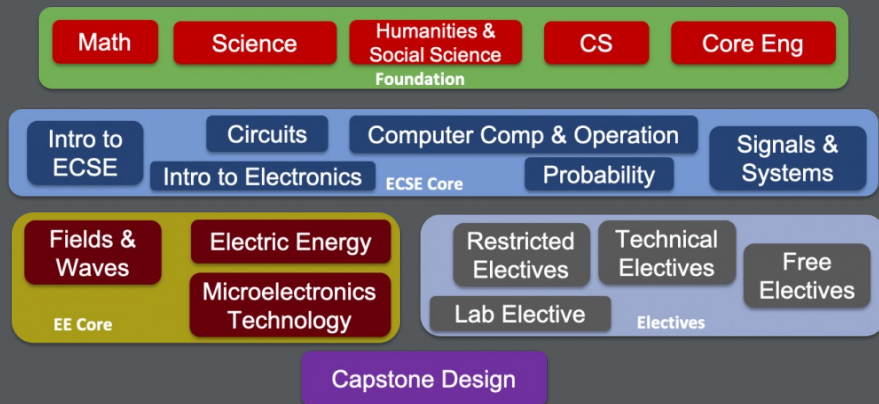


ILE – Research

- Identify your interest vs. ECSE research areas.
- Find faculty in your interest areas (visit <https://ecse.rpi.edu/research>).
- Visit faculty homepage and learn about their current projects.
- Contact faculty to inquire research opportunities.
- Talk to potential faculty mentor's students and visit their labs.



Beyond Arch



Beyond Arch

- Elective courses: ECSE Focus Areas
- ECSE Enrichment Seminar
- Undergraduate Research Project (URP)
- ECSE Capstone Design

THE
DESIGNLAB
at Rensselaer

Augmented Reality System Workspace Design

DESIGNLAB

Fall 2015 Team: Jacob Brown (IME), Zlata Chernysheko (IME), Thomas Cundiff (IME), Patrick Finn (IME), Kevin Griffin (IME), Alain Grullon G. (IME), Kevin Thuruthickara (IME), Nash Widowski (IME)

Raytheon
Integrated Defense Systems

Project Objective

- To create a foundation for Raytheon in workspace design and assembly to use going forward that can reduce labor and assembly costs through more efficient and increased labor production.

Expected Benefits

- Improve the ergonomics of the workspace design
- Reduce amount of worker errors with improved physical workspace
- Decrease assembly cycle time
- Reduce learning curve of the worker



Demonstration of the current ergonomic workspace prototype

Technical Approach

- The software sub team focused on learning how to use the software with the purpose of suggesting improvements to the software development team
- The testing sub team focused on improving the ergonomics of the physical workspace through testing the system
- The physical layout team designed and changed the system based on testing and research of industry standards

Semester Accomplishments

- Built a new frame using an 80/20 Aluminum kit
- Improved the camera and monitor mounting system
- Simulated the system using a cardboard circuit board model
- Analyzed test results to offer suggested improvements to the workspace
- Installed and analyzed software, in order to suggest improvements to it in a educated manner
- Built a prototype model on the software with purpose of tracking the final testing prototype model

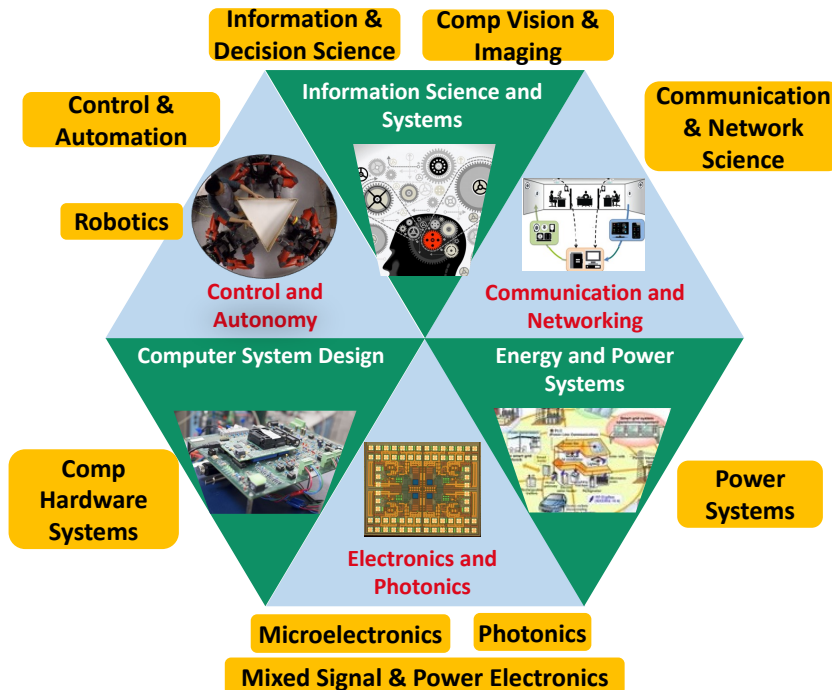
Suggested Improvements

- Make it faster and easier to upload files (CSV files, PDF files, JPEG images) into datamanager and AOI app
- Improve identification speed and tracking speed of the AOI app
- Improve autofocus feature of the AOI app
- Improve functionality of overlay feature on the software
- Mount Camera to onto back of monitor to create a virtual window
- Investigate alternative control methods



Current circuit board testing environment

Sponsor Mentors: Nicholas DeFilipp, Jeff Shubrooks; Project Engineer: Aren Paster (CORE); Chief Engineer: Junichi Kanai (ECSE)



ECSE Student Away Experiences

ECSE Arch Experience

Arhum A. Shaikh

Computer & Systems Engineering and Electrical Engineering (Dual-Major)

Expected Graduation Year: May 2023

Type of Arch Experience: Internship/Co-Op

Company: American Honda Motor Company (Marysville, OH) (20 Minutes NW of Columbus, Ohio)

Time Period: ~4 months

- Helped solve production issues when it came to vehicle parts.
- Discussed with supplier representatives about issues that were present with parts.
- Wrote daily reports that were all recorded in Honda's reporting system to keep track of active issues
- Re-defined international shipment process that will save Honda an average of \$19,845 per year o Brought 91.6% efficiency in international shipments

ECSE Semester Away Experience

Sathya Ramesh

Electrical Engineering, Expected Graduation 2023

Type of Arch Experience: Internship

Company: GlobalFoundries

Time Period: Less than 2 months

- Analyzed statistics of outputs in our department and we can be most sustainable with each process we take.

Advising

Your Advisors

FACULTY ADVISERS

Randolph Franklin

Qiang Ji

James Lu

Santiago Paternain

Jian Sun

Undergraduate Student Coordinator - Rama Hamarneh

hamarr@rpi.edu

518-276-8557

Appointment link: <https://go.oncehub.com/RamaHamarneh>

Advising: Sophomore – Senior Year

Faculty Adviser

- Major and Degree requirements
- Class schedule
- Major elective questions
- Future plans
- Undergraduate research
- Graduate school
- Questions about the field
- Research
- Advisor signatures
- Jobs and internships

ECSE UG Student Support

- Major and Degree requirements
- Graduation progress
- Class schedule
- Forms/signatures
- Declaring a minor
- Undergraduate research logistics
- Registration
- Transfer credit
- Study abroad
- Opportunities and events
- General questions!

ECSE Alumni Connection

Industry Adviser Program

Sign Up Here: https://rpi.qualtrics.com/jfe/form/SV_2tVBTSYDdCV32rl- by 9/23/22

The ECSE Industry Adviser Program is for undergraduate ECSE students to connect with an adviser in industry as they prepare to look for an internship, find an away opportunity, or look for a job. An Industry Adviser can give unique insight to the workforce and how to connect your academics to your job search.

ECSE Alumni Contact Sheet

<https://rpi.box.com/s/owa5t2at4xyr7orsau0wxwp2kiic0nsv> (Always in Weekly Newsletter)

Alumni who are willing to be contacted with career-related questions!

Additional Information and Resources

- Covid-19 Updates: <https://covid19.rpi.edu/students>
- URP: <http://info.rpi.edu/undergraduate-research>
- Co-op, internship: <https://www.rpi.edu/dept/cdc>
- Study Abroad: <http://info.rpi.edu/international-programs/study-abroad-and-exchange-opportunities>
- Co-term: <http://admissions.rpi.edu/graduate/admission/co-terminal.html>
- Emergency: 911, RPI Public Safety x6611
- Counseling center x6476 4100 Academy Hall
<http://studenthealth.rpi.edu/counseling>
- Stay healthy! <http://studenthealth.rpi.edu/health>

Connect with ECSE



@EcseRpi

ECSE RPI Students Graduates and Friends

@ECSEDeptRPI

ecse.rpi.edu

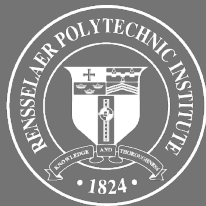
Questions?

Questions for ECSE Students about their Arch Experiences?

Further questions?

Dr. Rama Hamarneh, Undergraduate Student Coordinator

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