

Back to School Greetings from Carolyn and Adrienne

STEM@SVSU was one busy place in the summer of 2016. We send tremendous thanks to the many educators who participated in summer professional learning and to the middle and high school students who were engaged in STEM learning daily.

In this newsletter you will find the names of participating districts and individuals—we thank all for the continual and growing interest in so many fine offerings.

We are always excited to share our news and let you know what is coming—so please note details and opportunities as you read our update including how to request our popular SVSU Mobile Research Laboratory.

It is a pleasure to focus on Dr. Rajani Muraleedharan, Assistant Professor of Electrical and Computer Engineering who is very active with STEM outreach projects and excited to work particularly in encouraging women in engineering.

Best wishes for a great beginning to 2016-17.



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We STEM.

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Meet Rajani!!!!

- Faculty Advisor, Society of Women Engineers
- Volunteer, MindTrekks - Oct 2013, 14, and 15
- Mentor middle school students in STEM education.
- Mentored and organized, Middle School Girls STEM/GAME camp with Bay-Arenac ISD

A full day camp for middle school students in Great Bay Region. The camp introduces fundamentals of electrical engineering, and computer programming. The camp includes a tour of research labs and invited talk by local industrial leader.

- Judge, Michigan Regional High School Science Bowl - Mar 2016:

To encourage high school student participation in nationally recognized academic competition that tests students' knowledge in all areas of science and mathematics.

- Mentored and Organized, High School Girls STEM camp New Lothrop Public Schools: Fall 2015:

A half day camp with high school students that introduces fundamental concepts of Robotics and Programming

- Teacher Mentor, Dow Corning Foundation Fellows, Fall 2016:

To help design the projects and provide ideas and suggestions to the teachers in Frankenmuth Elementary School based on their interests in incorporating STEM curriculum.

- Judge, A. H. Nickless Innovation Award: Apr 2014 and 2016:

To encourage high school students in STEM education advancement - To develop ingenious yet real solutions for problems facing our world today and compete for a scholarship for yourself plus a grant for your school.

- Mentor and Supervisor, SVSU Robotics and Beyond Camp at SVSU, Summer 2015 and 2016: *A 9 full day High School STEM Camp focuses on understanding modern robotics using hands-on experience through projects involving Arduino and Lego Mindstorm kit*
- Presenter to community at large by organizing and participating in SVSU OLLI LED Butterfly, Summer 2016: *A 2 hour fun event for grandparents and grandchild that focuses on understanding fundamentals of engineering and energy conservation through hands-on and creative activity.*
- Volunteer, STEMaploozza camp - K-5 Girls Scouts, Fall 2015: *Volunteered to demonstrate hands-on team building activities to make a difference in STEM education for K-5 grade girl scouts students in Great Bay Region*
- Organizer SVSU Girls Scouts Camp 'Girls Love STEM' in collaboration with Saginaw Girls Scouts: *Grades 6 – 8th girls participate in STEM activities tailored to promote science and engineering through 3 week program using hands-on activities.*
- Organizer and Mentor, 1st IEEE SPAC (Student Professional Awareness Conference) at SVSU, Apr. 2014: SVSU ECE students
- Organizer and supervisor, 1st IEEE Students' Hands-on (PCB Layout) Workshop at SVSU: SVSU ECE and ME students
- Program Committee Member, Consumers Energy Talent Development Program (Fall 14 - present): *The program sponsors top high school students to take an introduction course to engineering (ECE101) at SVSU.*

2. What projects are you interested in which involves women in engineering?

I would be interested in projects that can foster female students interest in engineering education and career path by providing leadership and research opportunities through mentoring programs and collaborative multidisciplinary project. By engaging girls of all ages (K-12, Undergraduate and Graduates) in Engineering activities one can nurture young minds to become future engineers and creative thinkers for diverse workforce.

3. What partnerships would you like to pursue with local K-12 school districts?

Recent research has paved way for development of STEM based curriculum in K-12 education. I would like to focus on engineering-related concepts and

skills to solve design challenges through in-class hands-on activities (curriculum and discipline-focused camps) that can engage (both boys and girls) and encourage students to be future engineers.

4. What should local educators share with their students about engineering and other STEM fields at SVSU?

SVSU provides quality education through world-class hands-on experience and engages undergraduate students in solving real-world research problems by collaborating with local industry and community. SVSU supports leadership and entrepreneurship opportunities to mold 'a Cardinal' into becoming an innovative STEM workforce of tomorrow.

In many other universities, the focus is on providing research opportunities for graduate students however at SVSU there are many undergraduate opportunities.

5. What else would you like to include?

Together, I hope to empower women, so we may eradicate 'Why so few Women in STEM field is a norm of the past.'





Great Lakes Bay Regional Alliance STEM Impact Initiative Kicks off Regional Middle School Math Pilot

As the new school year begins, thousands of middle school students across the Great Lakes Bay Region will benefit from enhanced math training thanks to a \$500,000 pilot program launched by the Great Lakes Bay Regional Alliance.

The Middle School Math Project provides opportunities that go beyond standard classroom activities. In Freeland, for instance, students will have a new after-school program that takes part in math competitions, utilizing specialized preparation materials. In Bay City, students will have access to Spatial-Temporal Math, a highly regarded math instruction supplement with an online, visual learning resource.

Middle School Math Project pilot programs will take place this school year in the following districts:

- Bay County – Bay City Public Schools, Essexville-Hampton Public Schools
- Clare County – Clare Public Schools, Farwell Area Schools, Harrison Community Schools
- Gladwin County – Gladwin Public Schools
- Gratiot County – Alma Public Schools, Ashley Community Schools, Breckenridge Community Schools, Fulton Public Schools, Ithaca Public Schools, St. Louis Public Schools
- Isabella County – Beal City Public Schools, Mt. Pleasant Public Schools, Shepherd Public Schools
- Midland County – Bullock Creek School District, Coleman Community Schools, Meridian Public Schools, Midland Public Schools
- Saginaw County – Carrollton Public Schools, Freeland Community School District

These pilot programs are the latest result from the 2014 STEM Impact Initiative, an effort led by the Great Lakes Bay Regional Alliance (GLBRA) to create a roadmap for building a STEM talent pipeline.

“There is a talent war being waged across the United States and across the globe,” said Matthew Felan, President & CEO of the GLBRA. “The Great Lakes Bay Region needs to have the most robust STEM talent pipeline possible to meet the growing needs of our current employers and to attract new business and jobs to the region. The middle school mathematic pilots are an important next step in building our STEM talent pipeline.”

One key component of the pilot programs involves educator support. Saginaw Valley State University will lead a program to develop math specialists involving up to 25 teachers from across the region, potentially impacting 2,500 students. The Gratiot-Isabella Regional Education Service District will launch a program for 44 teachers, impacting up to 5,000 students, in the following districts: Alma, Ashley, Beal City, Breckenridge, Bullock Creek, Clare, Coleman, Farwell, Fulton, Gladwin, Harrison, Ithaca, Meridian, Midland, Mt. Pleasant, Shepherd, and St. Louis.

The Middle School Math Project has been made possible by financial support from several organizations committed to regional STEM excellence, including:

- Bay Area Community Foundation
- Midland Area Community Foundation
- Saginaw Area Community Foundation
- AT&T
- The Dow Chemical Company
- Dow Corning Foundation
- Nexteer Automotive
- Clare-Gladwin Regional Education Service District
- Gratiot-Isabella Regional Education Service District

About the Great Lakes Bay Regional Alliance: The mission of the Great Lakes Bay Regional Alliance is to encourage, support and celebrate regional collaboration and initiatives that will improve the economic vitality and quality of life in the Great Lakes Bay Region. The Great Lakes Bay Regional Alliance is comprised of 48 Board Members who represent Bay, Isabella, Midland and Saginaw counties. www.greatlakesbay.com



The SVSU Mobile Research Laboratory is rolling!

Interested in requesting the STEM Mobile Lab for middle school and high school visits? Please visit the website (www.svsu.edu/stem) to find the application for the 2016-2017 school year. The request is due back by September 30. There are two opportunities:

1. For middle and high school visits, please complete the application with the requested dates. All applications will be reviewed and confirmed by mid October.
2. For interested elementary schools to host the SVSU Mobile Research Lab, there is also a connecting activity offered by the SVSU Regional Mathematics and Science Center. To arrange for an elementary school-wide event, contact Tamara Barrientos, Director, Regional Mathematics and Science Center at 989-964-4115 or by email tarizola@svsu.edu. At this time, there are no planned individual elementary classroom visits.

The deadline for all requests is September 30, 2016.

Summer Programs on Campus Draw Capacity Enrollments from both Teachers and Students

The Dow Science and Sustainability Education Center involved 5 SVSU Faculty members, 9 SVSU students, 20 high school students and 9 K-12 teachers impacting potentially 1350 K-12 students. All involved were paid with grant funds to conduct research.

High school students involved were Taylor Anderson and Isiah Pfundt, John Glenn; Abbie Bauer and Gracie Lefler, Reese High School; Ross Brown, Bay City Western; Emily Cho and John Radke, Nouvel Catholic; Sarah Jacobs, Meridian Early College High School; Chloe Kubacki, Heritage High School, GLBEC; Rachel Laskowski, Bullock Creek High School; Samuel Maher, Arthur Hill High School; Darla Martinez, Saginaw Arts and Sciences Academy; Hope McLellan-Brandt, Freeland High School; Apoorva Ojha, HH Dow High School, Robin Rodriguez, Valley Lutheran High School; Emma Ruiz, Taylor Shivers, and Tyler Warner, Carrollton High School; Nathan Willour, Hemlock High School and Jenny Wu, Bay City Central High School.

Teachers participating were Tricia Benkert, White Pine Middle School and Melanie Galonska, Heritage High School, Saginaw Township Community Schools; Ben Cooper, Valley Lutheran High School; Craig Coopersmith, Carrollton High School, Carrollton Public Schools; Aaron Jurek, John Glenn High School, Bangor Township Schools; Jean Marie Learman, Saginaw Arts and Sciences Academy, Saginaw Public Schools; Jesse Place, Handy Middle School, Bay City Public Schools; Brooklynn Szymoniak, Shepherd High School, Shepherd Public Schools and Megan Witte, Nouvel Catholic Central.

Participating Faculty were Jennifer Chaytor, Marty Arford, Kyle Cissell, Jim McEvoy and David Stanton coordinated by David Karpovich.

The Dow Corning Fellows program involved 13 SVSU Faculty and 27 K-12 teachers impacting potentially 2575 K-12 students.

Faculty included: Tami Sivy, Pat Cavanaugh, Garry Johns, Kyle Cissell, Matthew Vannette, Bob Tuttle, Adam Wahhaussen, Amanda Ross, Jennifer Chaytor, Curis Grosse, Christopher Nakamura and Edward Meisel, coordinated by project manager Stephanie Brouet.

K-12 teachers included: Cindy Altes, Allison Van Driesche and Lisa Welch, Bay City Public Schools; Andrea Bitterman and Dylan Harrington, Chesaning Union Schools, Heather Brey, Julie Leach, Amanda Livingston, Tosha Miller, Beth Warner, Jan Zimba and

Angela Zimmerman, Frankenmuth School District; Brian Edlelbrock, Midland Public Schools; Matthew Ferguson and Melinda Freeland, Kingston Community Schools; Kimberly Fluder, Saginaw Township Community Schools; Sara Forbing, Tina Wallace and Ashley Nicol, Caro Community Schools; Melissa Haworth and Katherine Sollman, Saginaw Public Schools; Michelle Jaruzel and Kristi Schenk, Millington Community Schools; Carrie King, Essexville-Hampton School District; Jennifer Peruski, Freeland Community School District; Becky Trudgeon, Merrill Community Schools.

Funding from the Herbert H. and Grace A. Dow Foundation supported high school students in four different STEM camps taught by SVSU STEM Faculty.

Topics included: Growing into the Future with Plant Science; STEM Exploration Camp; Robotics and Beyond; and Fruits as Natural Bleaches.

Faculty involved were Chris Nakamura, Anthony Revis, Holly Little and Rajani Muraleedharan.

Students included Denarion Benjamin, Tanvi Sharma, Safi Syed, Sarah Syeda, and Alex Wang from Saginaw Public Schools; Cameron Bragg, Dawson Brown, Parker Haller, and Savannah McCarty from Bay City Public Schools; Emiliano Flores and Annika Wilson from Hemlock Public Schools; Rita Halphen, Weston Johnson, Henry Ma, and Julia Powers from Midland Public Schools; Mark Krudy from Mosas Homeschool Academy, Vanessa Osuagwu from Saginaw Township Community Schools, Jack Horrigan from Bangor Township Schools and Joshua O'Laughlin from Valley Lutheran.

Additionally, 62 middle school students from the Saginaw Public Schools and Bay City Public Schools participated in a Summer STEM Camp focused on mathematics.

The project was led by Dr. Amy Hlavacek assisted by other SVSU faculty including Jan Hlavacek, Christopher Nakamura, George Corser and Ilhyng Cho.

The project is unique because it also includes SVSU undergrads as team leaders along with 15 former campers, now high school students, who served as Teaching Assistants.

Summer SMEK Camps with highest enrollments ever!

Over 120 students participated in SMEK Jr. and SMEK Sr. in the summer of 2016.



Hour of Code for Elementary Students Offered

Fourth grade classrooms from the Great Lakes Bay Region can apply to attend the SVSU Hour of Code activity on Thursday, December 1, 2016. Applications are on the website and due October 7, 2016. Two classrooms will be selected to participate in Code Writing and a STEM activity at the Marshall Fredericks Sculpture Museum with lunch provided. The program began last year and was highly successful. The opportunity has no cost but schools must provide transportation.

STEM Position Posted . . .

Looking for an opportunity to be involved with our SVSU Mobile Research Lab?

A part-time position (20 hours a month) is posted on the Jobs at SVSU website. Check it out today!

Are you ready for the 4th annual A.H. Nickless Innovation Award competition?

Last year, you stepped up, formed a team and submitted an abstract. Maybe you even made it to the top 20 teams and were at SVSU on competition day. Now, you have an edge. You know what to expect and can use that experience to change the world.

Are you missing a chance to WIN BIG?

Registration opened September 1, and we haven't seen your name on the roster. If you need more information, check out our [website](#), and remember:

- Teams can register before their abstract is complete, but abstracts must be submitted by 4 p.m. on October 31
- A sample abstract, complete rules, an FAQ, online registration and all of the key details are available at ahninnovationaward.com
- We are happy to answer questions; submit them online via our [contact form](#)

Now is the time to team up, get passionate, think innovatively and work hard. Please share this information with your friends and encourage them to get involved.

We want to see you WIN BIG!

In last year's competition, students from H.H. Dow High School in Midland created a portable device, powered by a variety of energy sources, with the ability to utilize electro dialysis to desalinate saline water and create potable water – taking first place and earning **\$45,000** in prizes!

FIRST

The start of a new school year means the beginning of another awesome, engaging, fun-filled **FIRST** season! If you are not familiar with **FIRST**, it is a K-12 robotics program that is **F**or **I**nspiration & **R**ecognition of **S**cience and **T**echnology. The journey of **FIRST** begins at the early elementary age with Junior**FIRST** Lego League (JFLL), followed by **FIRST** Lego League (FLL) at the upper elementary level. Middle School students compete in the **FIRST** Tech Challenge (FTC), while high school students compete with 120 lb. robots in **FIRST** Robotics (FRC).

Many Dow STEM ambassadors have mentored teams throughout the Great Lakes Bay Region, across Michigan, and nationally as well. *If you would like to help starting a team at a local school, please contact Adrienne Cole (acole@svsu.edu).* Registration is already open for all levels and the challenge season starts soon for JFLL, FLL, and FTC. If you are already working with a team, feel free to email me if you need any support throughout the year. Thank you for considering involvement in such an incredible and inspiring program!

Dates to Note:

- **MI Regional Science Bowl** - hosted by SVSU
Saturday, February 18, 2017
Registration opens on October 1, 2016
Contact: Andrew Chubb (achubb@svsu.edu)
- **MATHCOUNTS**
Saturday, February 25, 2017
Held at SVSU
Contact: Brian Vokal (bjvokal@midcogen.com)
- **Math Olympics** - hosted by SVSU
Early April
<https://www.svsu.edu/matholympics/>
Contact: Jan Hlavacek (jhlavace@svsu.edu)
- **Annual STEM Teacher Dinner** - look for upcoming announcement of specific date and keynote speaker – the event will be in February 2017

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