Wavelengths

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

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Section Chair's Message

Volunteering:
IEEE volunteers learn leadership and team building skills that are not usually part of the engineering curriculum. At IEEE SEM we have developed a Volunteer Portal to display current opportunities within our organization There are openings at Chapters, Affinity Groups and committees. See page 4 for more details. Please realize this portal is a work in progress so your comments are welcome and please consider volunteering.

Nominations and Elections:
Speaking of volunteering, the nominations website will open in September for volunteers to serve at the Section, Chapter and Affinity Group levels. These are elected positions and the procedure is discussed on pages 2 and 3.

Student Elevation to Full Membership in August
All students graduating before the end of 2018 will be automatically elevated to Professional Member status sometime around mid-August. We encourage all newly elevated members to renew and receive **50% off their first year**! eNotice to follow on this.

Upcoming Events:
The Fall Conference committee has been formed and they are having their organizational meetings. If you wish to contribute, please contact any SEM officer for details.

Information on the annual Embedded Systems Workshop is available on pages 7 and 8.

A Robotics meeting is planned at Mcity in Ann Arbor, for details see page 9.

Many other events can be viewed on the interactive calendar on the home page of the section web site www.ieee-sem.org

STEM Activity:
The SEM Library STEM program is growing thanks to our volunteers and the generous financial support of ZF. Volunteers are needed as teachers to facilitate this growth and popularity. Please read more information about the program on pages 10 and 11.

An international STEM activity that we at SE Michigan support financially and with volunteers as well, is Robofest. This year's robotics competition is reported in a fascinating manner on pages 17 through 22.

I look forward to hearing from you and seeing you at our events. As always, your ideas and suggestions are encouraged and welcome.

Robert Neff
IEEE SEM Section Chair
RLNeff1@gmail.com

Election Ballots 2018

2018 SEM Officer Nominations are here!

The survey site used to nominate members for a place on the ballot will become active during a first week in August and will close by the second week in September. Please keep an eye out for an **eNotice** announcing opening of the survey site.

"Executive Committee" 'officer 'elect' positions.
We are now in our 3rd 'Transition' year as we move from electing new officers for the Section Executive Committee each year to the election of 'Elect' positions for all the ExCom officers (Chair, Vice-Chair, Secretary and Treasurer).

The 'Elect' position provides for the election of new officers one year ahead of requiring them to take their office and assume their duties. This approach benefits both the Section and the Officer in several ways.

Most obvious and important is that the 'elect' position officer will know, one year in advance of taking office which position she or he is to prepare to hold. This will allow a full year in which the newly elected officer is able to 'shadow' the current officer holding the position for which they have been elected and 'learn the ropes' for that office. This will ensure that the transition to the new officers is greatly simplified and the new officer are fully up-to-speed at the start of their term.

In addition, the expansion to two-year terms, enacted with the SEM 2015 election, gives our elected 'ExCom' officers sufficient time to plan and execute more 'long term' projects and plans than was feasible with a one-year term.
Note: The full ExCom officer terms require a 5-year commitment of each officer candidate:

- One year as the 'elect' position,
- Two years filling the post, and
- Two years as the 'Past' position officer,

…during which they serve as advisers and assistants to the current officer holding the position.

Staggered Election Terms:
Because of the 'staggered terms' that were enacted with the 2015 elections, this year we elect our Section Chair and Vice-Chair. Next year we will elect out Secretary and Treasurer.

Elections in 2018.
This year we will hold elections for the following Section-level Officers:
Section Chair and Section Vice-Chair will begin their year (2019) as 'Elect' – Officers in training.
Then they will begin serving their full two-year terms in 2020.

Each year we select our Section, Senior Executive Committee officers, alternating between Chair & V-Chair and Secretary and Treasurer, every other year. This provides an overlap with experience with 'in training' officers to ensure greater continuity of operations and the fulfillment of long term programs and projects. (Of course, we also look for the immediate 'past' officer to remain active and help coach the entire team.)

Affinity Groups and Technical Chapters:
Elections for the Section's four Affinity Groups and seventeen Technical Chapters (geo-units) officers:

- **Chair,**
- **Vice-Chair,**
- **Secretary,**
- **Treasurer,**

This will continue without changes. While several Affinity Groups and Chapters have been observing implementation of the current ExCom election process with a great deal of interest, none have come forward to propose a modification to their own electrical process.

Requirements:
Note that holding office in any Affinity Group (AG), or Technical Chapter (Ch), requires membership in the AG or Ch. in addition to membership level above Student level. Please ensure that you (if you self-nominate) or your acquaintance (if you nominate another person) holds the required membership in the organization.

You will also need the Candidate's IEEE Member number in order to complete the survey form, which helps avoid any 'surprise' nominations in which the person elected does not know they are on the ballot for an office election.

Student members are encouraged to seek offices in their local university Student Branches, and gain experience in those organizations. Students may not hold office in any Section geo-unit. (We want them to concentrate on getting that all-important degree before becoming too involved with Section level activities.)

Election Ballots 2018 – Continued:

Non-Elected Geo-Unit Positions:
While we elect our basic officers (Chair, Vice-Chair, Secretary, Treasurer), many geo-units utilize the talents and energy of 'appointed' volunteers. For these positions, contact the Chair of the particular geo-unit, and discuss the opportunities. Alternatively, look at the article on the following page about the new Volunteer Portal, which may be a more comfortable.

Election Schedule:
As noted in our announcement of the election process early in the year, we are now notifying all "voting members" of the opportunity to run for election to any elected governing position within the Section, Affinity Groups or Technical Chapters.
The election schedule we are following for 2019 is as follows:

- **March:** Announce upcoming Elections.
- **August:** Advise members of the election schedule and options for ballot nominations.
- **September:** Open the survey site for candidates for nomination (self-nominated or nominated by another member.)
- **October:** Open the vTools election system for two weeks
- **November:** Compile election results, resolve alternatives, fill vacancies.
- **December:** Deliver results report to the Section Executive Committee.

Voting Members:
All members above Student Member grade are eligible to vote and hold Chapter, Affinity Group and Section office. (Yes, Graduate Student Members do qualify for election to officer positions.) Please consider what positions you might wish to both serve the IEEE as well as learn new leadership and organization governance skills.

Be prepared to submit a self-nomination for an officer position when we open the balloting process. If you are new to this process, it makes good sense to begin your involvement in any of the governance areas by initially gathering experience in 'volunteer' roles. You are encouraged to have involvement at the committee volunteer level as stepping stones to prepare for elected offices.

Note: All standing committee positions are 'appointed' and not 'elected'. Contact the current Committee Chair to discuss volunteer options. Also see the SEM Organization Roster posted in the SEM Website for details of each committee. **http://sites.ieee.org/sem/files/2018/07/Organization_Roster_IEEE_SEM_7.15.2018a.pdf**

K.williams@ieee.org
Chair: N&A Committee.

Section Mission

Inspire – Enable – Empower and Engage Members of IEEE at the local level.
For the purpose of:

- Fulfilling the mission of IEEE to foster technological innovation and excellence for the benefit of humanity,
- Enhancing the members' growth and development throughout their life cycle, and
- Providing a professional home.

Section Goals

- Increase member engagement,
- Improve relationships with and among members,
- Increase operational efficiency and effectiveness, within the section and its interfaces,
- Enhance collaboration – serve as the local face of IEEE to the community,
- Increase membership, and
- Ensure the collection of appropriate information necessary to assist the IEEE to become a data driven organization.

Volunteer Portal

In July, the Nominations and Appointments Committee (N&ACom) released a Google Form designed to identify volunteer opportunities available at all levels of our Section, including

Executive Committee,
Standing Committees,
Affinity Groups,
Technical Chapters, and
Student Branches.

Simply stated, the tasks and volunteer needs change with time, and it is not unusual for these tasks to require more time and energy than one elected or appointed officer can handle alone. When we find ourselves in that situation, we reach out to our members for assistance.

From Officers to Members:
With the help from our officers, the new Volunteer Portal will become a central depository for all our volunteer needs easily accessible to all members. This site will feature links to details for each volunteering opportunity being advertised, including estimated time commitment, a detailed job description, where applicable, and the name of the geo-unit and officer requesting the assistance along with pertinent contact information.

You can view a preliminary version of the Portal at:
http://sites.ieee.org/sem/about-sem/

The Portal will be a 'one stop shop' for all members interested in volunteering with any of the SEM organizations. And each potential volunteer can select those opportunities that look most interesting to them and contact the particular officer seeking help to discuss the opportunity in more detail.

Note: While elected officer positions require membership level above the Student level, as well as, membership within the geo-unit, neither of those restrictions apply to appointed volunteer positions. This means that a volunteer position obtained through the Portal may be a great introduction to operations of a particular geo-unit and its management team.

Web Site Access:
The new Volunteer Portal is now accessible and shows a small selection of volunteering opportunities currently available with SEM. We expect that new opportunities will be added as the officers seeking help enter them into the system.

We hope that our members will find Volunteer Portal helpful in becoming actively engaged with the local IEEE organization that interest them and will give them the experience to grow new talents and skills.

IEEE SEM Geo-Unit Officers, Committee Chairs, etc. have been asked to fill in the Volunteer Survey form in order to populate the Volunteer Portal with the positions information about the area where you need volunteer help, or to replace vacant positions in their Administrative Committees.

SEM Officers may find the form at:
https://drive.google.com/open?id=1DAyfMNIzv4W0lhhwIsKKvvIPGNLHexoEi99FFmhnilE

kw

2018 IEEE Day

Save the Date

IEEE DAY 2018™

LEVERAGING TECHNOLOGY FOR A BETTER TOMORROW

Tuesday, October 2

Social Mixer

Open to Members & Non-members

That's right! Come celebrate with us and bring along a friend or a colleague!

Details to follow soon,
please keep an eye out for an announcement.

EMC Classes

LEARN EMC

Become an EMC Expert!

Professional EMC training in the Midwest

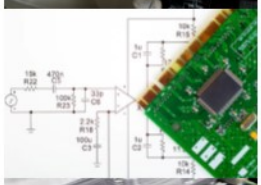
2018

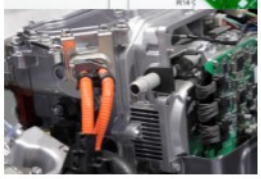
Detroit, Michigan

Sept 17-18 Design for Automotive EMC Compliance
Sept 19 Automotive Printed Circuit Board Layout
Sept 20 Power Electronics Design for Electromagnetic Compatibility

Stoughton, Wisconsin

Oct 15-16 Fundamentals of Electromagnetic Compatibility
Oct 17-18 Design for Guaranteed EMC Compliance





For Details & Registration, visit LearnEMC.com

10% discount for IEEE Members! Use Coupon IEEE-EMC at checkout.

Register early, classes are expected to fill!

Prof. Todd Hubing, IEEE Fellow and past-president of the IEEE EMC Society, is the primary instructor for LearnEMC short courses. His unique approach to EMC education uses real applications to demonstrate important fundamental concepts.

ESW 2018 Flyer

Embedded Systems Workshop 2018

October 20, 2018, 8:30 a.m. to 4:30 p.m. (Saturday)
Lawrence Technological University (LTU)
21000 West Ten Mile Road, Southfield, MI, 48075

IEEE South East Michigan Computer Chapter is offering a one-day **(free)** workshop on Embedded Systems on Saturday, October 20th, 2018. This workshop is open to all engineers and students. This is the 16th year that the event is being held.
The aim is to disseminate knowledge, directly benefitting the IEEE members, at the same time **improve the technology skills pool, indirectly boosting the Michigan economy**. Speakers and experts from the embedded systems industry will be making presentations, and will also be available for discussions and networking throughout the day. In addition to the technical presentations, there will be industry information display and professional recruitment tables. Use this opportunity for networking with other engineers, industry experts and embedded enthusiasts.

Please confirm your participation by registering on the IEEE events web site **(Deadline is 18th October 5 pm!):**
https://events.vtools.ieee.org/m/175036
Venue: LTU, Room A200, Architecture Bldg, 21000 West 10 Mile Road, Southfield, MI, 48075

Sponsors: Vector CANtech, Infineon, and many others…
Vendor tables with demos, technical booklets, and job recruiting opportunities will be available. There is no cost to attend. A complimentary lunch is provided. Random raffle and door prizes representing the embedded controllers and systems industry will take place. All are welcome. **Do post** this flyer in your workplaces, share/inform your peers and colleagues about this event. It is a great way learn not only what is going on, but network with other professionals as well.

Brought to you by the IEEE SE Michigan Computer & Education Society. Do consider choosing to become a member, boost your technical skills, broaden your awareness of compute-based engineering in the region, support numerous similar initiatives & learn other benefits this brings.

Open to all, **Pre-registration** ***is necessary prior to attending!*** **The deadline to register is 18th October 5 PM**
When responding, please indicate your lunch preference***: turkey, chicken, tuna or vegetarian sandwich***

For Technical questions, contact the Program Committee **at: esw2018@ieee-sem.org**
A PDH Certificate will be made available for participants who Pre-register and attend the full event.

ESW 2018 Program & Organizing Committee: Subra Ganesan (Chair), Sharan Kalwani, Ashok Prajapati, Ramesh S, Carla Gerst and Ben Sweet

ESW 2018 Announcement

The 16th Annual IEEE Embedded System Workshop is planned on October 20th, 2017, 8:30 AM to 4:30 PM (Saturday), in Auditorium Room A200, Architecture Building, LTU, 2100 West 10 Mile Road, Southfield, Michigan 48075

IEEE Southeastern Michigan Computer Society (aka Chapter 5), and LTU are offering a one-day workshop on Embedded Systems from 8:30 am to 4:30 pm, Saturday October 21st, 2018. This is a **free** workshop open to all engineers, students and this is the 16th year of this annual workshop. Many of the attendees have gained valuable insights after attending the workshop.

The aim of this workshop is to disseminate knowledge, which will directly benefit the IEEE members and indirectly **improve the technology expertise and the Michigan economy**. Speakers and experts from a number of areas within the embedded systems industry will be making presentations; the speakers and experts will also be available for discussions and networking throughout the day.

Please see November 2017 issue of Wavelengths Newsletter for a summary of the last year's event http://sites.ieee.org/sem/files/2017/11/November_2017_WL_Rev1.8-1.pdf

Please be sure to share as much as possible about this event in your organization for maximum participation in this workshop. In addition to the presentations, there will be vendor display tables and recruitment tables. We encourage all IEEE members to use this opportunity to interact & network with fellow professionals & engineers.

Please confirm your participation by ***registering*** on the IEEE vTools site https://events.vtools.ieee.org/m/175036.

Lunch will be provided courtesy of several workshop sponsors, supporters, and conference well-wishers. When responding, please indicate *your lunch preference: turkey, chicken, or vegetarian sandwich.* Coffee/tea, water, juice, and snacks will be provided during the breaks.

For Technical Questions, feel free to contact:

Prof. Subra Ganesan at: ganesan@oakland.edu; or by phone: (248) 370 2206
or
Sharan Kalwani at: sharan.kalwani@ieee.org; or by phone: (248) 980-UNIX

Register and attend for a chance to win multiple door prizes, including books, boards, T-shirts, and several tech gizmos.

A Certificate of Attendance will be available for participants who preregistration and attend the full event.

Robotics & Mcity

PRESENT

Connected and Automated Vehicles: History, Development, Mcity, and Future outlook

ABSTRACT

Mcity is a research center established 3 years ago at the University of Michigan, which focuses on the research and early deployment of Connected and Automated Vehicles (CAVs). A unique feature of Mcity is the development of living laboratories, and their use as tools for research and education. In this talk Dr Peng will discuss current status of CAVs, major activities at Mcity, and their future challenges, including their societal impacts.

WHERE
University of Michigan Mcity Campus
2901 Baxter Road
Ann Arbor, Michigan

WHEN
Thursday October 18, 2018
6:00 PM to 8:00PM

The event is sponsor by Mcity of the University of Michigan at Ann Arbor. Admission is free, but ***registration is required*** for an accurate food head count. Pizza and drinks to be provided by Mcity. This is a great opportunity to network and meet peers in the Robotics field!

Register at https://events.vtools.ieee.org/m/174406

SPEAKER BIOGRAPHY

Dr Huei Peng is the Roger L. McCarthy Professor of Mechanical Engineering at the University of Michigan and currently serves as the Director of the University of Michigan Mcity. Huei Peng received his Ph.D. in Mechanical Engineering from the University of California, Berkeley in 1992. His research interests include adaptive control and optimal control, with emphasis on their applications to vehicular and transportation systems. His current research focuses include design and control of electrified vehicles and connected/automated vehicles.

In the last 10 years, he has been involved in the design of several military and civilian concept vehicles, including FTTS, FMTV, Eaton/Fedex, and Super-HUMMWV—for both electric and hydraulic hybrid concepts. He served as the US Director of the DOE sponsored Clean Energy Research Center—Clean Vehicle Consortium, which supports more than 30 research projects related to the development of clean vehicles in the US and in China.

STEM Schedules

Two sets of class are being planned at the Dearborn Heights and Wyandotte libraries beginning, this September. Classes are in planning for the libraries in the following topics:

Some Basic Tools:

- Observation & Measurement:
- Fundamentals of Electricity:
- Micro-controller programming:
- Micro-controller expansion:

Amateur Radio Technology

- Technician Amateur Radio License
- Morse Code
- Safe Soldering & Kit Building
- Voice & Digital Communications

Basic Tools:
The first classes begin the week after Labor Day, and usually continue for 8 to 10 weeks depending on the topic and class attendance. We begin the cycle of basic tools in the fall with Observation & Measurements to introduce new students to both the fundamental tools and the mathematics needed to support clear thinking and observing of nature.

In early winter we present on the Fundamentals of Electricity classes because we begin with the Bohr model of atomic structure and static electricity. Those demonstrations and experiments need an atmosphere with minimal humidity to be effective, which ties us to this particular time of year. At that point, students are ready to step into Micro-controller programming and expansion which builds on the knowledge they have gained in the previous two classes.

Amateur Radio
Some will question the need for students to gain an FCC license as an Amateur Radio Operator believing that the existence of cell phone technology has displaced this form of communication and as a hobby it has nothing to contribute. Nothing could be further from the truth.

There are a number of reasons why involvement in Amateur Radio should be offered as a path to understanding technology. Not least among them are the deep learning and confidence participants gain from the experience of passing an FCC license examination, building their own radio receiver, transmitter, antennas, and learning to communicate using multiple modes of transmission has led many to lifelong, successful careers in science and engineering. Indeed, it is no accident that 30% of American astronauts are active Amateur Radio operators!

Amateur Radio not only can become a lifelong hobby with so many facets that it is difficult to explore all in a single lifetime, it also becomes the basis for a questioning mind to use as a spring board to other areas of interest and inquiry. In its documents authorizing the existence of the Amateur Radio Service, the Federal Communications Commission in Part 97 lists five significant areas of contribution of Amateur Radio:

1. Service to the public (especially in emergencies)
2. Enhancing international goodwill
3. Advancement of the radio art
4. Advancing skills in both the communication and technical areas
5. Trained operators, technicians, and electronics experts

Contact the library nearest you after August 20th to obtain complete class schedules:

Caroline Kennedy Library, 24590 George Street, Dearborn Heights, MI 48127, PH: 313-791-3800
Bacon Memorial District Library, 45 Vinewood, Wyandotte, MI 48192, PH: 734-246-8357

STEM Instructors Needed

SEM Library STEM (Continued)

We hope that the above article inspired some of the engineers and engineering students to devote some spare time to providing 'exposure' classes in basic technology to groups of young people in STEM classes in local libraries. Two sets of class are currently being planned for the Dearborn Heights and Wyandotte libraries beginning, this September. We need instructor **teams** in each library interested in working with young minds to guide them in learning how to use some of the basic tools of modern technology and engage them in such a way that their interest is maintained and grows.

Several classes are planned for the libraries in the following parallel sequences:

Basic Tools:

- Observation & Measurement:
- Fundamentals of Electricity:
- Micro-controller programming:
- Micro-controller expansion:

Amateur Radio Technology

- Technician Amateur Radio License
- Morse Code
- Safe Soldering & Kit Building
- Digital Communications

Instructors Needed:

IEEE engineers and engineering students are expected to teach the Basic Tools sequence, beginning with the first classes in September, the week after Labor Day.

Classes in Amateur Radio technology benefit from licensed Amateur Radio Operators to conduct the training. IEEE members who are also licensed 'Hams' are most welcome but IEEE membership for teaching these classes, it is not an absolute requirement.

Those interested in exploring teaching STEM classes are requested to fill in the form at:
https://docs.google.com/forms/d/e/1FAIpQLSe0IZVY9mrJZ6YDMsG2_VxQNInbzeEAO14M7c0swiu7wm836g/viewform?usp=pp_url

I look forward to meeting you.

Kimball Williams
k.williams@ieee.org

INCOSE Meeting

INCOSE

INCOSE Michigan Chapter Meeting

August 7, 2018
6:30 – 9:00pm

Digital Engineering: Transforming the Product Lifecycle

Model-Based Systems Engineering, Digital Thread, Digital Twin...these and many other terms have been applied to the transformation currently underway in the development, use, and sustainment of modern products. Ms. Philomena (Phil) Zimmerman is key leader driving with this transformation within the Department of Defense. Her role gives her unique insights into the technological, procedural, and cultural implications of stewarding the adoption of digital engineering. Please join us for this rare opportunity.

Dinner: 6:00pm

Speaker / Q&A: 6:30-7:30pm

Tickets
Members - $10 Student Members – Free
Affiliates - $15 New Members: Free with Membership

EVENT REGISTRATION REQUIRED
The Engineering Society of Detroit

About Our Speaker

Ms. Philomena Zimmerman is the Deputy Director of Engineering Tools and Environments within the Office of the Deputy Assistant Secretary of Defense for Systems Engineering.

She is responsible for evolving and identifying Modular Open Systems Approach (MOSA) practices into a practicable design option for national security system development and identification of evidence to ensure the systems are using MOSA for the benefit of the DoD enterprise.

She is also responsible for the transition from current acquisition practice to digital engineering practice, and for investments in engineering tool development under the Engineered Resilient Systems program. She leads multiple working groups in these areas, coordinating among the Services, Agencies, Joint communities, academia, and industry.

Ms. Zimmerman has received numerous awards in her federal career. She has a Bachelor of Science in Mathematics from St. John Fisher College, with an emphasis in Computer Science from Rochester Institute of Technology. She is DAWIA Level 3 certified in Engineering and Test and Evaluation.

Register at:
https://www.eventbrite.com/e/incose-michigan-chapter-meeting-august-7-2018-tickets-48434733592

ZF Employment Ad

This Month in August

Or: Notable Events in History, which I Did Not Know! ☺

Electric Traffic Light Invented, August 5th, 1914

On this day in tech history, the American Traffic Signal Co installed the first electric traffic light system at East 105th Street and Euclid Avenue in Cleveland, OH. The device used red and green lights with a buzzer that warned when the color was about to change, and allowed police and fire stations to control the signals in case of an emergency. The system was designed by James Hoge, and patented in 1918. His "municipal traffic control system" displayed electrically-powered STOP and MOVE signs mounted on posts at each corner of an intersection that were wired to a manually-operated switch housed inside a control booth nearby. The introduction of the traffic light allowed police officers directing traffic to move inside a glass booth on the corner where they controlled the light and reported accidents or emergencies.

Marvin Minsky, born August 9th 1927, died January 24th, 2016

On this day in tech history, mathematician and co-founder of the field of artificial intelligence Marvin Minsky was born in New York. A pioneer of robotics and telepresence, Minsky has contributed to computer science in artificial intelligence, cognitive psychology, mathematics, computational linguistics, robotics, optics, and advanced technologies for exploring space. Growing up he attended private schools before serving a year in the Navy in 1944. He then received his bachelors (Harvard, 1950) and PhD (Princeton, 1954) in mathematics, and worked as a junior fellow at Harvard for three years. Minsky built the first randomly wired neural network learning machine, SNARC (stochastic neural analog reinforcement computer) in 1951. Made of 400 vacuum tubes, it was based on reinforcing the synaptic connections that contributed to recent reactions. In 1957, Minsky began working at MIT, where he was the Toshiba Professor of Media Arts and Sciences and a professor of electrical engineering and computer science, until his demise. After coining the term in 1956, Minsky and John McCarthy co-founded the Artificial Intelligence Project at MIT in 1959. Minsky famously said, "No computer has ever been designed that is ever aware of what it's doing; but most of the time, we aren't either."

Steve Wozniak, born August 11th, 1950

Inventor, engineer, computer programmer, and philanthropist Stephen Gary Wozniak, aka “Woz,” was born in San Jose, CA, on August 11, 1950. The son of an engineer who worked for Lockheed, Wozniak showed an early interest in electronics as well as ham radio, earning his ham radio operator license when he was in sixth grade. In the early 1970s, he attended the University of Colorado and then the University of California at Berkeley, but dropped out and went to work for Hewlett-Packard designing calculators. At about this time, Wozniak was introduced by a mutual friend to the slightly younger Steve Jobs, who would become his good friend and business partner. Teenagers at the time they met, Wozniak and Jobs discovered they both enjoyed playing pranks. One of the pranks they pulled together involved building a “blue box,” an electronic device that allowed them to make toll-free long-distance telephone calls (illegally). During one call, Wozniak reached an operator at the Vatican and claimed to be Henry Kissinger calling on behalf of Richard Nixon. In a video from the Santa Clara Valley Historical Association, Jobs tells the story of the blue boxes and states that “if we hadn’t built blue boxes, there would have been no Apple.” Wozniak and Jobs later raised $1300 to create the single-board Apple I personal computer kit, which Wozniak designed and built. They unveiled the product at a meeting of the Palo Alto-based Homebrew Computer Club, an informal group of electronic enthusiasts and hobbyists who first started meeting in 1975 in Menlo Park, CA. According to Wozniak, “We didn't sell very many Apple Is the first year. We built them at night in our garage. At first we expected to sell circuit boards at the Homebrew Club: just put in your own chips and it'll work. Then we got a $50,000 order from a local store and we were in heaven.”

Wozniak and Jobs, along with another partner, Ronald Wayne, formed Apple Computer on April 1, 1976. Less than two weeks later, Wayne sold his share of the company back to Wozniak and Jobs for $800. The company was incorporated January 3, 1977. (Apple removed “Computer” from its name in January 2007 to reflect an increased focus on consumer electronics.)

Electromagnetic induction discovered, August 29, 1831

Michael Faraday is credited with the discovery of electromagnetic induction on August 29, 1831. While Faraday receives credit for the discovery, electromagnetic induction may have been anticipated by the work of Italian priest and physicist Francesco Zantedeschi in 1829 or that of Joseph Henry, who around 1830 made a similar discovery, but did not publish his findings until later. Faraday formulated that electromotive force produced around a closed path is proportional to the rate of change of the magnetic flux through any surface bounded by that path. Faraday experimented by wrapping two insulated coils of wire around an iron ring. He found that, upon passing a current through one coil, a momentary current was induced in the other coil—mutual induction. If he moved a magnet through a loop of wire, an electric current flowed in that wire. The current also flowed if the loop was moved over a stationary magnet. Changing magnetic field produces an

electric field. This became Faraday's Law when it was modeled mathematically by James Clerk Maxwell. Faraday's Law became one of Maxwell's equations, which have since evolved into field theory. Faraday would later use the principles to construct the electric dynamo.

Kilby demos all-semiconductor circuit, August 28, 1958

Just weeks before the birth of the integrated circuit, Jack St. Clair Kilby of Texas Instruments, demonstrated a multivibrator circuit of discrete silicon elements to TI's Willis Adcock on August 28, 1958. Adcock had hired Kilby the May before. According to IEEE publishings authored by Kilby, his job was not fully defined when he accepted the position. "My duties were not precisely defined, but it was understood that I would work in the general area of microminiaturization," Kilby wrote in the July 1976 document, "Invention of the Integrated Circuit." He began tinkering and soon built an IF amplifier. When the plant shut down for a mass vacation during the summer, Kilby, at TI for only a short time, had no vacation time to take. He was "left alone to ponder" and sketched out a circuit made entirely of semiconductors. When Adcock returned from vacation, Kilby showed him the sketches. Adcock was skeptical and requested proof such a device would work. So Kilby – using packaged growth-junction transistors, resistors formed by cutting small bars of silicon etched to value, and capacitors cut from diffused silicon power transistor wafers – assembled and demonstrated a circuit made of discrete silicon elements.

The demonstration, while hardly what Kilby is celebrated for, was a step closer to the IC. "Although this test showed that circuits could be built with all semiconductor elements, it was not integrated. I immediately attempted to build an integrated structure, as initially planned," Kilby wrote. Weeks later, he demonstrated the first IC.

The Great North East Blackout August 14, 2003

On August 14, 2003, more than 50 million people in the United States and Canada were left in the dark thanks to one of the most wide-spread blackouts in history. The blackout began at approximately 4:10 pm ET and impacted several US states including New York, Michigan, Massachusetts, and Ohio, as well as parts of Canada, including most of Ontario. First impact turned into cascading failure and more than 508 generating units at 265 power plants shut down during the outage, an approximate loss of 80%. Beyond electrical systems, telephone and cellular systems became overloaded. Water systems were lacking pressure because pumps lacked power, which could cause contamination. August heat, reaching more than 90ºF in some parts of New York, aggravated the situation. However, looting and violence were kept to a minimum.

After immediate concerns of terrorist activity were refuted, US and Canadian investigations–as well as finger pointing–began with neither country taking blame for the event. Stated, but disputed, reasons for the blackout's trigger included a 3,500 MW power surge at the New York Independent System Operator (NYISO), lightning storms damaging equipment, the "Blaster Worm" virus infiltrating power control systems, an outage at a nuclear plant in Pennsylvania, overloading at the Niagara-Mohawk power grid, and a sudden shift in the direction of power flow on the northern portion of the Lake Erie Transmission Loop. In the end, much of the blame was placed on FirstEnergy Corp, a diversified energy company headquartered in Akron, Ohio. Its systems were said to be unreliable and inadequate at the time. However, US government authorities did not punish FirstEnergy for its role in the blackout because law at the time did not require electric reliability.

Many believed that such a blackout would not occur again after the Northeast Blackout of 1965. Indeed, safeguards were put into place to avoid cascading failure. Isolated failure had occurred on some of the same systems affected in the 1965 and 2003 blackouts during the NY Blackout of 1977. The 2003 blackout lasted more than 24 hours in some locations.

Readers are invited to share interesting ***engineering*** events or milestones that occurred in September for publication in the next month's issue. Submissions can be made using direct email to the editors at: wavelengths@ieee-sem.org

Sharan Kalwani
Associate Editor, Wavelengths,
Vice-Chair, Chapter 5 (Computer Society), Chair, Chapter 13 (Education Society) and PACE
Passionate Engineering History Buff/Aficionado

Blended Learning

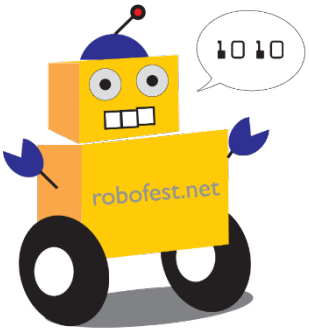
Presenting the IEEE Blended Learning Program, which combines latest eLearning techniques with extensive hands-on practice. Designed to empower engineers to become future ready.

IEEE BLP takes the best of virtual learning and face-to-face training to provide a flexible yet comprehensive learning experience. A typical course runs for 10 hours or so and costs around $220 (Depends on the number of course hours). IEEE issues a certificate after the test. Courses range from VLSI, embedded systems, Internet of Things and many more. Visit this link for more information:*https://blended-learning.ieee.org/Portal/Course/Home#/About-BLP*

Please see one of the flyers on IOT topic.

Professor Subra Ganesan
Chapter V, Computer Society Chapter Chair
IEEE South East Michigan Section.

Robofest 2018 Report



LAWRENCE TECHNOLOGICAL UNIVERSITY ROBOFEST®

The 19th Annual World Robofest event took place this year at Lawrence Tech University. As has been the precedent from previous years, the event has grown massively in stature and international proportions. In 2018 the event hosted a total of over 2,448 students and a staggering 803 teams! Add to that the fact that 12 countries were represented for the 2018 event, these included Canada, China, Colombia, Egypt, France, Ghana, Hong Kong, Macau, Mexico, South Africa, South Korea and of course the US of A. From within USA – in the 2018 edition, they hosted teams from 9 states namely, California, Florida, Hawaii, Illinois, Michigan, Minnesota, Ohio, Oregon, and Texas. Clearly by any yardstick, this qualifies SE Michigan as the global hub of robotics student competitions.

First a little bit about Robofest itself.
Robofest is a festival of competitions and events with autonomous robots that encourages students to have fun while learning principles of Science, Technology, Engineering, and Math (STEM) and Computer Science. Students design, construct, and program the robots. Any robotics kit(s) are allowed in the construction of robots. Robots can be programmed in any programming language. Robofest programs support Computer Science for all. Robofest was founded by Computer Science Professor Dr. Chan-Jin "CJ" Chung and is sponsored by Lawrence Technological University. (See reference [1] at the end of this article). In particular I like their motto: ***"Little Robots, Big Mission"***

Since 2000, over 20,000 students have competed in Robofest, including teams from USA and the countries of Brazil, Canada, China, Colombia, Egypt, England, Ecuador, France, Ghana, Hong Kong, Hungary, India, Korea, Lebanon, Macau, Mexico, Morocco, Romania, Singapore and South Africa.

Teams who win their regional event are welcome to participate at the worldwide tournament held in Michigan.

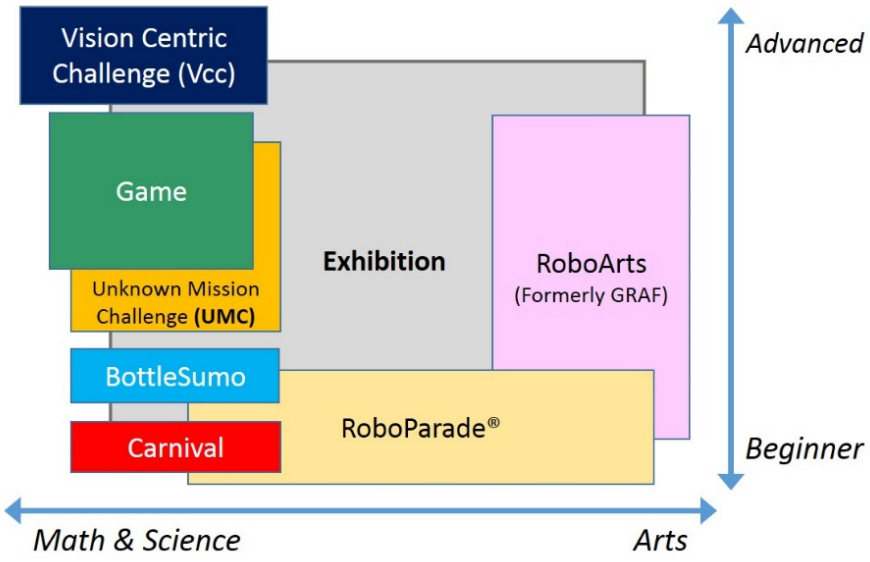
Teams usually compete in the following age categories:

- Junior (grades 5-8),
- Senior (grades 9-12) and
- College divisions.

For RoboParade, Junior includes 4th grade. Student teams, each composed of up to five members each, can participate in a variety of competitive events in 2018 edition, as listed below:

Category Name	Description/Explanation
GAME	Accomplish robotics missions using fully autonomous robots. Robofest Game especially *puts math skills to the test*.
Exhibition	Each team has complete freedom to show off any creative computer programmed robotics R&D project.
Vcc	Vision Centric Challenge. Advanced category for Sr. High School and College students
BOTTLESumo	Be the first robot to push intentionally a bottle off the table OR be the last robot remaining on the table. (*Level: Beginners*)
RoboParade	A parade of autonomous robotic floats (*Level: beginners*)
RoboArts	RoboArts (Formerly GRAF). Robotic Music, Fashion & Dance, Robotic Painting, and Interactive Kinetic Sculptures
UMC	Unknown Mission Challenge. Mission tasks will be totally unknown until the day of competition
summer camps	Hands-on workshops + mini competitions
CARNIVAL	Hands-on STEM+C learning with interactive robots
WISER	World conference on Integrated STEaM Education through Robotics.

To get a better idea of the depth and breadth of the Robofest Tournament, the following graphic is very illuminating.



Shared below by Dr. CJ Chung (or CJ as he is popularly known) are a few pictures from the event, some of the medals and a few of the winning teams.

Picture 1: IEEE 2018 Medals for Michigan Qualifiers, MI Invitational and the World Championship

Picture 2: Teams for the MI Qualifiers

Picture 3: Teams for the MI Invitational

Picture 4: Group Panoramic Picture at the World Robofest

Picture 5: IEEE Plaque presented to the Section

Picture 6: Some of the medals presented to the students by IEEE since 2005

Judges for the 2018 Robofest were:

- Maria Castaño
- Benancio Gonzalez
- Grant Kruger
- Thassyo Pinto
- Wuming Jing
- CJ Chung
- Javier Alcazar

The IEEE SE Michigan section would like to congratulate everyone who participated in this event, and brought great visibility with their energy, talent and keen/innovative competition. CJ has put together a wonderful Youtube video compilation…you can enjoy it at https://www.youtube.com/watch?v=8KpTzOTHCB0.

By the way did you know that Robofest has their own wikipedia entry? See https://en.wikipedia.org/wiki/Robofest. (FYI: The 2019 Competition Season Kick-off meeting will be scheduled for Oct 2018)

[1]: Robofest HomePage https://www.robofest.net/

Sharan Kalwani
Associate Editor, Wavelengths,
Vice-Chair, Chapter 5 (Computer Society), Chair, Chapter 13 (Education Society) and PACE
Passionate Engineering History Buff/Aficionado

Team RUSH!

The following article was written by students Sydney Havens, Emily Jeung, Jessica Ray, Val Vargas, and Coach Kyle Hughes, all with the Clarkston High School. It reflects their experience to date with the Robotics competitions in Michigan and nationally. Truly very inspiring, I do encourage you to share this after reading it. Any follow up can be redirected to the editors, who will put you in touch with the team principles. See also the companion article report on the 2018 Robofest World Tournament. – **Sharan Kalwani**

Team R.U.S.H. (Respect, Unity, Spirit, Heart) is a FIRST (For Inspiration and Recognition of Science and Technology) high school robotics team from Clarkston High School, in Clarkston Michigan. In 2018, we completed our 22nd season of robotics with 33 students (22 boys, 11 girls). R.U.S.H. partners with CSMTech (Clarkston Science, Mathematics and Technology Academy), a specialized STEM program in Clarkston which many of our students participate. Team R.U.S.H. was inducted into the FIRST Robotics Hall of Fame Team in 2014 upon winning the most prestigious, FIRST Chairman's Award at the world Championship, recognizing teams that are role models in their community.

Over these past 22 years, Team R.U.S.H. has become so much more than a team just about robots. Our team name R.U.S.H. actually stands for 4 of our main core values which are Respect, Unity, Spirit, and Heart. These are incredibly important to our team and we aim to embody each of these values on and off the field. In addition to our core values, everything we do is focused around our mission statement, "To create self-confident leaders who inspire others to celebrate STEM." This is crucial to who we are because it drives us to do more than train our own students, but also to inspire those around us and spread the message of FIRST. Lastly, one of our most important mottos this past year has been fail faster, learn more, focus and execute. This means that mistakes are inevitable, but the more we fail, and the faster we fail, the more we learn from our mistakes. We then take the lessons from our learning opportunities and execute them to the best of our abilities.

The idea of failing faster, learning more, focusing and executing can be seen in regards to many of our events. A great example of this is our annual R.U.S.H. Regatta, which serves as one of the main fundraisers for our team, garnering over $40,000 this past year. It involves cold-calling local companies for sponsorship, but it also acts as an engineering challenge where students construct boats out of nothing but cardboard and duct tape. As one of the first activities they do, the new students see right away how we learn from our failures. Regatta teams go through an extensive prototyping and design process to come up with the best boat design possible. However, our boats aren't always successful and, unfortunately, they often sink. This compels students to begin learning from their mistakes before the season even begins. And it's equally as important to face the failure while still having fun on race day. Sinking team members are often laughing and everyone remains in high spirits throughout the day. The Regatta becomes a learning experience as all members hope to improve for the following year.

Learning more is also something we encourage, not only in our own team but also when mentoring others. We take everything we learn and aim to share our experience with lower level robotics teams in the community. Through our FRC (FIRST Robotics Competition) mentor camps for high school teams, middle school FTC (FIRST Tech Challenge) teams, and elementary school FLL (FIRST Lego League), and Jr. FLL teams we spread our knowledge at all levels of FIRST. This truly allows us to continue growth and innovation in our upcoming robotics teams, leading to the next generation. Our students become even better engineers as they join the upper levels of FIRST.

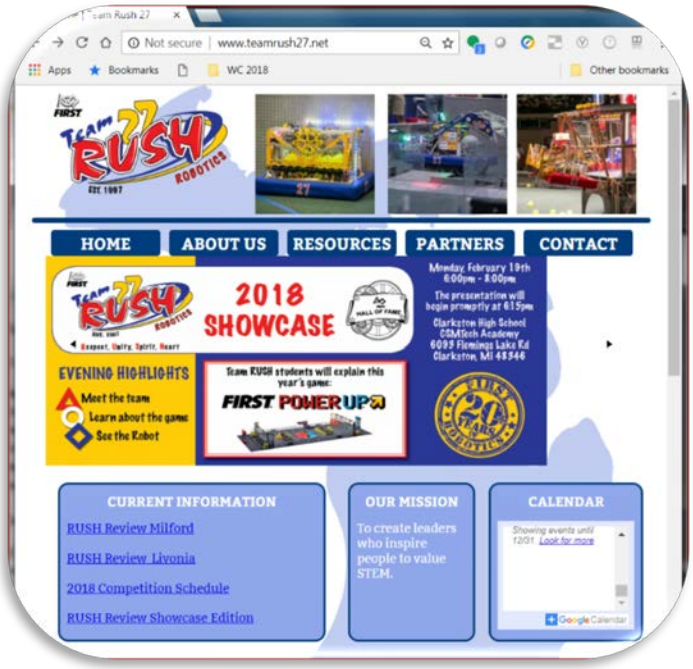
We also have consolidated over 20 years of our successes and failures in our Toolkit for Success. This is a 350-page document that describes some of our best accomplishments and biggest setbacks as a team. We have shared these documents over 1,500 times across 49 states and 13 countries, hoping that teams from around the world can learn from our past experiences. Through this, we hope to inspire others to continue learning from their mistakes, rather than become discouraged. We want even the youngest members of the FIRST community to become inspired innovators and persistent problem-solvers. As our own build season approaches, we will continue to use this approach to fuel our own success as well.

Our season begins with Kick-Off, the first Saturday in January, where no matter what part of the team you work on, we all meet to brainstorm and discuss the design of the robot. We start with prototyping mechanisms that often end up breaking or falling apart. But this knowledge is crucial into drafting our always evolving robot design. Each prototype is truly a learning experience, giving us opportunities to better our shop skills and gain knowledge; without them, we would not be able to compete with the robot that we have at the end of the season.

The engineering process continues, even after the six weeks in which we are allowed to build the robot, as we are always trying to improve. An example of this was our evolving forklift design. We were always adding reinforcements, testing new materials, and examining other robots to create a mechanism that was both compatible with others and successful. After build season, our tournament season is filled with improvement on more than just the robot. We also work to focus and execute on the field. Our drive team is always striving to improve our strategy and better coordinate with other teams. Whether it's creating new autonomous programs that can be partnered with other robots or coming up with new strategies on the field, it is imperative that our team grows in every aspect of competition. Whether it's creating new materials to share with others, or creating new versions of our forklift design, we used each lesson to continuously improve. This was a crucial piece to all of the success that we had this season. Without failing, learning, and executing, our success would not have been possible.

Another highlight of our season has been having our first ever real FIRST practice field. Thanks to Clarkston Schools we were able to have the space for a full size FRC field that has become a hub for robotics in Clarkston and the FIRST community. It has allowed us to test and prototype faster than ever because we can truly examine each design immediately. We can run drive practice whenever needed (even during our lunch break). We are able to strategize, develop autons, and tune our skills easier than ever before. It has also helped expedite the engineering process, to fail even faster, learn more, and execute before we even reach the competition field.

Without this key motto on our team, we would not have been able to become World Champions of robotics this past year. Our mentors, parents, and school have created a motivating and exciting environment where every member of our team has been able grow exponentially. Our team strived to improve every single day of the season leading to unimaginable success on and off the field. We hope that one day students across Michigan and the United States will have access to the same opportunities we have had. What we have learned through our time on Team R.U.S.H. has allowed us to do so much more than just build robots. Our values, team mission, and motto expand far beyond the competition field and we know we will have so many opportunities waiting for us in the years to come.



Team RUSH web site

Team RUSH group picture

Sydney Havens, Emily Jeung, Jessica Ray, Val Vargas, and Coach Kyle Hughes
Clarkston High School

Amateur Radio Classes

AMATEUR RADIO LICENSING COURSE

BECOME A HAM RADIO OPERATOR!

The Hazel Park Amateur Radio Club IS offering
A 10-week Course for

THE TECHNICIAN (entry) AMATEUR RADIO LICENSE Examination

(NO MORSE CODE REQUIRED)

WHEN: Every Monday, from September 10, 2018 TO November 12, 2018—7PM- 9PM
WHERE: FOP Lodge 130, 2233 Burdette St., Ferndale, MI

COST: *INSTRUCTION IS FREE; LICENSE MANUAL IS $25, AVAILABLE FROM THE INSTRUCTORS AT THE FIRST SESSION.*

This class will use the 2018-2022 Edition of the ARRL Technician Manual

FCC License EXAM WILL TAKE PLACE AT THE LAST SESSION (Nov. 12) FEE: $15

******PRE-REGISTRATION IS NECESSARY******

AMATEUR RADIO IS ALIVE AND WELL! WE ARE AT THE CUTTING EDGE OF TECHNOLOGY! JOIN OVER 2.5 MILLION HOBBYISTS AROUND THE WORLD--and in Orbit-- WHO ARE INVOLVED IN EMERGENCY RESPONSE, INTERNATIONAL FRIEND-MAKING, RADIOSPORT CONTESTS, DIGITAL SIGNAL PROCESSING, SATELLITE DESIGN/BUILDING. A GREAT PLAYGROUND FOR HACKERS/MAKERS.

QUESTIONS AND REGISTRATION—CONTACT Jerry: W9NPI@ARRL.NET

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GENERAL CLASS LICENSING COURSE

HPARC AMATEUR RADIO CLUB

TAKE THE NEXT STEP!

the Hazel Park Amateur Radio Club is offering a 12-week Course for

THE AMATEUR GENERAL CLASS LICENSE EXAMINATION

WHEN: every MONDAY, from September 10, 2018 TO November 26, 2018—7PM TO 9PM

WHERE: I-3 DETROIT DIY SPACE, 1481-A Wordsworth, Ferndale, MI

COST: *INSTRUCTION IS FREE; LICENSE MANUAL IS $25, AVAILABLE FROM THE INSTRUCTORS AT THE FIRST SESSION.*

FCC License EXAM WILL TAKE PLACE AT THE LAST SESSION (Nov 26) FEE: $15

******PRE-REGISTRATION IS NECESSARY******

YOU'VE THOUGHT ABOUT IT--NOW, YOU CAN FINALLY GET AROUND TO IT! THERE'S NOTHING LIKE SEEING YOUR HARD WORK PAY OFF—HF PRIVILEGES WILL OPEN A NEW WORLD OF DXING TO YOU!

REGISTER: W9NPI@ARRL.NET

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AMATEUR EXTRA LICENSING COURSE

BECOME THE BEST YOU CAN BE!

the Hazel Park Amateur Radio Club offers a 14-week Course for

THE AMATEUR EXTRA CLASS LICENSE EXAMINATION

WHEN: MONDAYS from September 10, 2018 TO December 10, 2018—6PM TO 9PM
WHERE: HAZEL PARK HISTORICAL MUSEUM, 45 E. PEARL AVE, HAZEL PARK, MI

COST: *INSTRUCTION IS FREE; LICENSE MANUAL IS $25, AVAILABLE FROM THE INSTRUCTORS AT THE FIRST SESSION.*

FCC License EXAM WILL TAKE PLACE AT THE LAST SESSION (Dec 10) FEE: $15

******PRE-REGISTRATION IS NECESSARY******

NOW, YOU CAN FINALLY GET AROUND TO IT! THERE'S NOTHING LIKE SEEING YOUR HARD WORK PAY OFF—OUR INSTRUCTOR IS INNOVATIVE AND THOROUGH, AND YOU'LL HAVE AN EXCELLENT CHANCE OF PASSING, IF YOU DO YOUR HOMEWORK.

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HPARC AMATEUR RADIO CLUB

ORG UNITS cheat sheet

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit is in parentheses)		
Consultants Network Affinity Group:	(CN40035)	
Life Members:		
Young Professionals:		
Women in Engineering:		
Chapter: 01	(SP01)	Signal Processing Society,
	(CAS04)	Circuits and Systems Society and
	(IT12)	Information Theory Society
Chapter: 02	(VT06)	Vehicular Technology Society
Chapter: 03	(AES10)	Aerospace and Electronic Systems Society and
	(COM19)	Communications Society
Chapter: 04 “Trident”	(AP03)	Antennas and Propagation Society,
	(ED15)	Electron Devices Society,
	(MTT17)	Microwave Theory and Techniques Society,
Chapter: 05 “Computer”	(C16)	Computer Society
Chapter: 06	(GRS29)	Geosciences and Remote Sensing Society
Chapter: 07	(PE31)	Power Engineering Society,
	(IA34)	Industrial Applications Society
Chapter: 08 “EMC”	(EMC27)	Electromagnetic Compatibility Society
Chapter: 09	(IE13)	Industrial Electronics Society,
	(PEL35)	Power Electronics Society
Chapter: 10	(TEM14)	Technology and Engineering Management Society
Chapter: 11	(EMB18)	Engineering in Medicine & Biology
Chapter: 12	(CS23)	Control Systems Society
Chapter: 13	(E25)	Education Society
Chapter: 14	(RA24)	Robotics And Automation Society
Chapter: 15	(NPS05)	Nuclear Plasma Sciences Society
Chapter: 16	(CIS11)	Computational Intelligence Society,
	(SMC28)	Systems, Man and Cybernetics Society
Chapter: 17	(NANO42)	Nanotechnology Council

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit is in parentheses)	
University Of Detroit-Mercy:	(STB00531)
Michigan State University:	(STB01111)
University Of Michigan-Ann Arbor:	(STB01121)
Wayne State University:	(STB02251)
Lawrence Technological University:	(STB03921)
Oakland University:	(STB06741)
Eastern Michigan University:	(STB11091)
University of Michigan-Dearborn:	(STB94911)

Curated & Formatted By Sharan Kalwani,
Associate Editor, Wavelengths,
2017-2018

Non-IEEE Events

We try to publish IEEE events in several places to ensure that everyone who may want to attend has all the available relevant information.

SEM e-Wavelengths:
www.e-wavelengths.org
This is our 'Active' event listing site where everyone should look first to see what events are scheduled for our Section in the near future.

SEM Web Calendar:
http://sites.ieee.org/sem/
Select "SEM Calendar" button in the top row of the website.

SEM Web Meetings:
http://sites.ieee.org/sem/
Select "SEM Meeting List" button in the left-hand column.

vTools Meetings:
http://sites.ieee.org/vtools/
Select "Schedule a Meeting" button in the left-hand column of buttons.

Other IEEE Local Meetings:
http://www.e-wavelengths.org/

Other Happenings

Since IEEE members tend to have eclectic interests, we want to give everyone a heads up for some of the non-IEEE events that may be of interest. Let us know if you have a special interest in a field that encourages technical study and learning, and wish to share opportunities for participation with members of the section.

Send details to: wavelengths@ieee-sem.org

Michigan Institute for Plasma Science and Engineering: Seminars for the 2017-2018 academic year: **http://mipse.umich.edu/about/seminars.htm**.

Amateur Radio Clubs in Southeastern Michigan
A fairly comprehensive listing of all the 'Ham' clubs in SEM.) **http://www.wa2hom.org/ham-radio-clubs-in-se-michigan/**

Model RC Aircraft
http://www.skymasters.org/

Model Rocketry - http://team1.org/

Astronomy - http://www.go-astronomy.com/astro-clubs-state.php?State=MI

Experimental Aircraft Association
https://www.eaa.org/en/eaa/eaa-chapters/find-an-eaa-chapter

Robots
http://therobotgarage.com/about-us.aspx

Science Fiction Conventions
http://www.conclavesf.net/

https://2018.penguicon.org/

http://2018.confusionsf.org/

Mad Science
http://www.madscience.org/

ESD PE Review Class
www.esd.org

Maker Faire:
http://www.thehenryford.org/events/makerFaire.aspx

Executive Committee

The SEM Executive Committee is the primary coordination unit for Southeastern Michigan (SEM) IEEE operations. The basic organization chart below shows the 2018 arrangement of communications links designed to provide inter-unit coordination and collaboration.

The SEM Executive Committee meets in a teleconference each month on either the first Wednesday or first Thursday at noon. The specific meeting days, times, phone or WebEx numbers and log in codes are published on the IEEE SEM Website calendar: **http://sites.ieee.org/sem/** Click on the "Calendar" button in the top banner on the first page of the web site.

If you wish to attend, or just monitor the discussions, please contact Eric George, the section secretary at: **eric.george.us@ieee.org** and request to be placed on the distribution list for a monthly copy of the agenda and minutes.

More meeting details are available on the next page of this newsletter.

Other Meetings:
About half of our members maintain memberships in one or more of the IEEE technical societies, which automatically makes them members of the local chapter which is affiliated with that society. As a result, they should receive notices of the local chapter meetings each month.

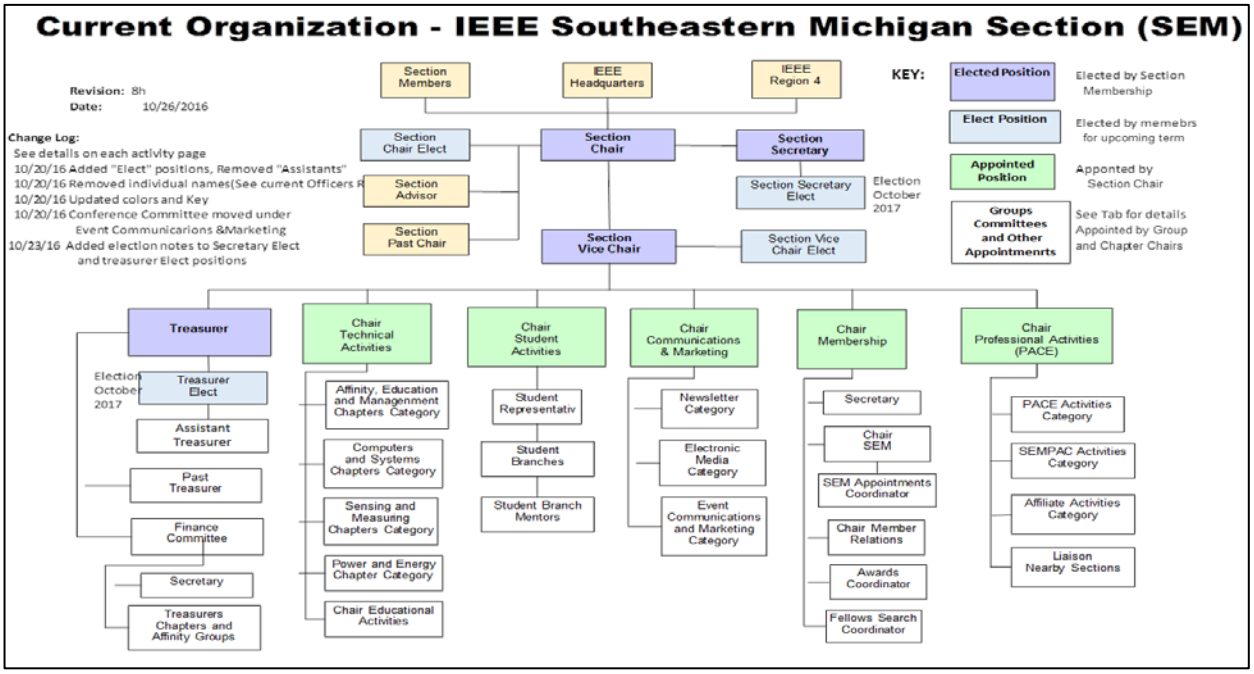
However, members of the section may have multiple technical interests and would like to have meeting information of other chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to send meeting information to our webmasters for posting on section's calendar.

More detailed information on meetings may be found through the IEEE SEM Website: **http://sites.ieee.org/sem/** and clicking on the **SEM meetings list** button near the bottom of the left-hand banner.

Automatic e-mail notification of web updates may be received using the "**Email Notifications**" button at the top of the **SEM Tools/Links** side banner.

Eric George - SEM Asst. Secretary

Download the complete SEM Organization Chart, in PDF format, from our Website at: http://sites.ieee.org/sem/
Click on "About SEM" Tab and "Current Officers" ***(NOTE: this is now password protected)***



ExCom Meeting Schedule

Below is the 2018 schedule for the Section ExCom meetings with links to add the events to your calendar. It is important that at least one person from each Chapter/Affinity Group attends each scheduled ExCom meeting. Information on each Face-to-Face (in-person) Meeting will be sent out once the venue is confirmed.

Please mark your calendars for the 2018 meetings. Or, link your personal calendar to the SEM Web calendar.

August 2, Thursday, Teleconference (online only), 12:00 – 1:00 PM, https://meetings.vtools.ieee.org/m/49035

September 5, Wednesday, Teleconference (online only), 12:00 – 1:00 PM, https://meetings.vtools.ieee.org/m/49036

October 4, Thursday, F2F (in-person meeting), 5:30 – 7:00 P.M., https://meetings.vtools.ieee.org/m/49037

November 7, Wednesday, Teleconference (online only), 12:00 – 1:00 PM, https://meetings.vtools.ieee.org/m/49038

December 6, Thursday, Teleconference (online only), 12:00 – 1:00 PM, https://meetings.vtools.ieee.org/m/49039

Note: All IEEE Members are welcome at any IEEE meeting, at any time but, please register so we can be sure to accommodate you.

Eric George
SEM Assistant Secretary

Section Focus

The IEEE SEM Section Officers have reaffirmed the Mission and Goals of the section with the guidance of the Region 4 leadership. The Mission and Goals conform to those of IEEE worldwide.

You have probably seen the Mission and Goals before. However, it is important to keep these clearly in mind and remind ourselves often that this is what we are about and what we are trying to accomplish.

Section Mission

Inspire – Enable – Empower and Engage Members of IEEE at the local level.
For the purpose of:

- Fulfilling the mission of IEEE to foster technological innovation and excellence for the benefit of humanity,
- Enhancing the members' growth and development throughout their life cycle, and
- Providing a professional home,

Section Goals

- Increase member engagement,
- Improve relationships with and among members,
- Increase operational efficiency and effectiveness, within the section and its interfaces,
- Enhance collaboration – serve as the local face of IEEE to the community,
- Increase membership, and
- Ensure the collection of appropriate information necessary to assist the IEEE to become a data driven organization.

It is now the task of the section leadership to guide and coach all section officers and elements to focus their activities on achieving those goals.

Editor's Corner

Previous editions in this series may be found on the IEEE SEM website at: http://sites.ieee.org/sem/. Click on the "Wavelengths" button in the top row of selections.

Comments and suggestions may be sent to the editorial team at wavelengths@ieee-sem.org

OR

k.williams@ieee.org
sharan.kalwani@ieee.org
jrwwoodyard@gmail.com
isullivan@ieee.org

We also recommend a cc to the chair of the Communications and Marketing Committee, Ravi Nigam at: ravi.nigam@ieee.org

We rely on our officers and members to provide the 'copy' that we finally present to readers of the newsletter. The **Wavelengths Focus Plan and Personal Profiles** plan shown in the matrix below is presented to ensure coverage of section activities and events.

We try to complete the newsletter layout a week before the first of the month to allow time for review and corrections. If you have an article or notice, please submit it two weeks before the first of the month or earlier if possible.

The plan below relies on the contributions of our members and officers, so please do not be shy. If you have something that should be shared with the rest of the section, we want to give you that opportunity.

Editors:

We are always looking for members interested in helping to edit the newsletter. The process is always more fun with more people to share the duties. Having more participants and contributors also helps us keep the newsletter interesting.

Heads Up

We are contemplating making the submissions of articles and events for the Wavelengths, a little easier and a little more inviting. Ideas are of course welcome and to this end, we are toying with setting up a little "newsletter portal". Stay tuned for some news on that end!

Join the Team:

If you feel you might like to join the team, or would like to train with us, please contact one of us at: wavelengths@ieee-sem.org OR any one of the following:

sharan.kalwani@ieee.org
jrwwoodyard@gmail.com
k.williams@ieee.org
isullivan@ieee.org

Wavelengths Annual Publication Plan for Articles

Month	AG's	Ch's	Ch's	SB's	Special Notice	Reporting Events	Monthly Focus	Awards
Jan		1		OU	Future Cities Judges	Election Results	Resolutions	
Feb	Cons	2		MSU	Science Fair Judges	Officer's Welcome	Surviving Winter	Future Cities
Mar		3	13	EMU	Spring Conf. Flyer	Spring Conference	Spring Conference	Science Fair
Apr		4		U/M-D	National Engrs Wk.	Future Cities	Chapter Focus	ESD - GOLD
May	Life	5	14		Outstanding Eng Awd	Science Fair	Elections - Prep	New Fellows
Jun		6			IEEE-USA Apmts.	ESD Banquett	Leadership Skills	SEM Awards
Jul		7	15		Nominations Call	MD-Webcasts	Students Issues	Region 4
Aug	WIE	8			MGA - Apmts.	Tech-Webinars	Womens Issues	
Sep		9	16	LTU	Region 4 Apmts.	Engineers Day	Professional Skills	
Oct		10		U/M-AA	Fall Conf. Flyer		Fall Conference	
Nov	YP	11	17	WSU	ELECTIONS!		Humanitarian	
Dec		12		U/D-M	IEEE-Com Apmts.	Fall Conference	Happy Holidays	

Wavelengths Annual Publication Plan for Personal Profiles

Month	Profiles	Profiles	Committees
Jan	Chair	New Officers	
Feb	V-Chair	Secretary	Communications
Mar	Treasurer	Sect-Adviser	Conference
Apr	Stud-Rep		Education
May		Sr Officers	Executive
Jun			Finance
Jul			Membership
Aug			Nominations
Sep			PACE Activities
Oct			Student Activities
Nov			Technical Activities
Dec		Editor-WL	

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Web & Social Sites

SEM Website
http://sites.ieee.org/sem/

Each of the sites below may be accessed through the SEM Website:

Section Website Event Calendar
(Select the "SEM Calendar" button - top row.)

SEM Facebook Page
(Select the "" button under the top row.)

SEM LinkedIn Page
(Select the "" button under the top row.)

SEM Officers:
For a complete listing of all - Section - Standing Committee - Affinity Group - Chapter and Student Branch Officers, see the SEM Officers Roster on the SEM web page under the "About SEM" button and select "Current Officers."

Online Community http://sem.oc.ieee.org

Section Officers

Section Chair
Robert Neff

Section Secretary
Eric George

Section Vice-Chair
Nevrus Kaja

Section Treasurer

Standing Committees:

Section Adviser
Don Bramlett

Chair Communications & Marketing
Ravi Nigam

Chair Educational Activities

Chair Finance
Nevrus Kaja

Chair Membership
Irina Sullivan

Chair Nominations & Appointments
Kimball Williams

Chair Professional Activities (PACE)
Sharan Kalwani

Chair Student Activities
Mel Chi

Student Representative

Chair Technical Activities
Kimball Williams

IEEE Southeastern Michigan

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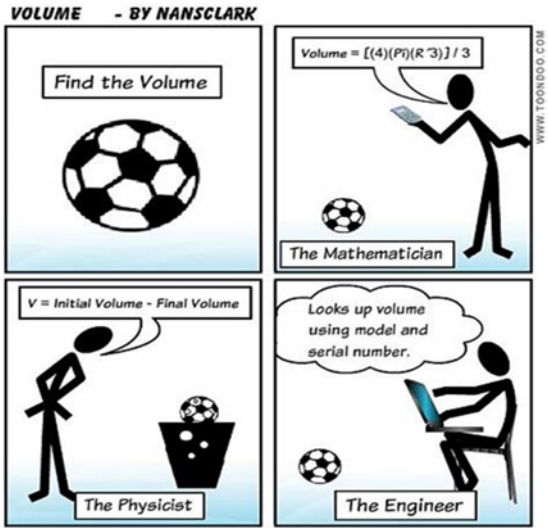
Visit Us on the Web at:
http://sites.ieee.org/sem



Advertising Rates

SEM Website & Newsletter Advertising is coordinated through our e-Wavelengths website at:

http://www.ieee-sem.org/ewavelengths/?page_id=181.

Please see the information listed on the site, and contact our web editor of e-Wavelengths, Ben Doerr, for further details.

Leadership Meetings

SEM Executive Committee Monthly Teleconferences:

- 1st Wednesday or Thursday of Each Month @ Noon
- Check the Section Web Calendar at:
  http://sites.ieee.org/sem/sem-calendar/
  (Select the "SEM Calendar" button in the top row.)

SEM Executive Committee Face-to-Face Meetings:

- 1/Qtr. Find the location, and Registration at:
  https://meetings.vtools.ieee.org/main

SEM Standing Committee Meetings:
SEM Affinity Group Meetings:
SEM Technical Society/Chapter Meetings:
SEM University Student Branch Meetings:

- Meeting schedules are announced on SEM Calendar
  http://sites.ieee.org/sem/
  (Select the "SEM Calendar" button in the top row.)

- Registration for all at:
  https://meetings.vtools.ieee.org/main