Wavelengths

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Volume 62 – Issue 12

Contents

Upcoming Events

We have several events coming up this month, all are listed below, FYI.

Event	Date	Time
IEEE SEM SECTION CONFERENCE BIWEEKLY MEETING - December 2022	01 Dec 2022	12:00 PM
SEM Section ExCom Monthly Meeting (TELECONFERENCE) for December 2022	01 Dec 2022	06:30 PM
FERC Order 2222: Key Concepts and Ongoing Steps Towards DER Aggregations in Wholesale Markets	05 Dec 2022	12:00 PM
IEEE SEM Chapter 1 & 4 Technical Meeting - Presentation: An outlook on beyond 5G	05 Dec 2022	8:00 PM
Engineering Pioneer - Frank Sprague: Documentary Night	06 Dec 2022	05:30 PM
Ch8: AdCom Teleconference	08 Dec 2022	11:00 AM
The Ultimate Space Telescope: Documentary Night	09 Dec 2022	05:30 PM
Nanotechnology For Electrical Engineers: A video introduction	13 Dec 2022	05:30 PM
HIL: Technical Presentation	15 Dec 2022	11:20 AM
Nano Devices & Drug Discovery: View from China	20 Dec 2022	05:30 PM

Note: All times are EST/EDT. You can also use this bookmark to view ALL of the links at a single glance **http://bit.ly/sem-upcoming**
If any events are missed do kindly bring them to the attention of *wavelengths@ieee-sem.org. Thank you!*

Chair's Column

Welcome to the December edition of the Wavelengths.

Spring 2023 Section Conference:
March 28, 2023 (Tuesday) is the rebirth/rejuvenation of our Sections conference. Please see "save the Date" flyer in this issue of Wavelengths. The conference is now in its early planning stages, we recommend you get int ouch with our Sections Conference chair: Keyur Patel (conference@ieee-sem.org) for information.

Elections:
Elections for 2022 are now over. The Elections and Nominations Committee are examining the results and verifying that all elected and write-in candidates are indeed eligible and willing to serve. Please let me take a moment to thank all officer volunteers who served over this past year. We will need your assistance over the upcoming year even if you no longer hold that office. Your experience is valuable and needs to be shared.

2023 Budget:
The ExCom will begin reviewing the 2023 budget the first week of December. Our Finance Committee chair has issued a call for budget input this week. Chapters, Affinity Groups and Committee Chairmen are asked to look it over at provide input. If you were granted a budget amount last year, you must adjust and justify what you expect for income and expenses for 2023. Please advise myself, Subra Ganesan (Finance Committee Chair) or Ramesh S (treasurer) as soon as possible. An updated version, based on inputs from the ExCom, will be considered at the December ExCom meeting. A Final Budget will be presented and approved shortly thereafter.
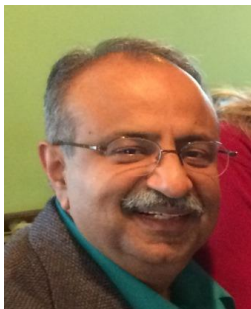
Clarion Call:
Issuing one final call. All those chapters who need a little assistance in getting their tech activities fulfilled for the year, do get in touch with us ASAP!

And, our editors threw in their monthly interesting history of technology & science stuff. If you know of others who are celebrating any sort of anniversary – do let me know.

Holidays:

May I wish all of you a happy time of year and a future of Peace on Earth. In many ways, Professionally, Personally and through IEEE, we are creating the future of humanity.

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

Sharan Kalwani
Via email: chair@ieee-sem.org
Section members are encouraged to engage using any of these online platforms:

Technical Activities Report

Ch's & AG's	Ave Tech Mtg. Attend	Ave Tech Mtg Guest	#L31 -Technical	#L31 -Admin	#L31 Professional	#L31 -Other	Geo-Unit Name	# Unreported	Total Mtgs
CnsIt	11	3	1	0	1	0	Consultants Network	0	2
LIFE	0	0	0	0	2	0	Life Members	0	2
WIE	15	3	3	11	0	1	Women In Engineering	0	15
YP	0	0	0	0	0	0	Young Professionals	0	0
1	50	1	3	2	0	0	Circuits & Systems, Signal Proc., Info Th.	1	5
2	32	4	6	1	0	0	Vehicular Technology	0	7
3	66	0	1	0	0	0	Aerospace & Elec. Sys., Communications	0	1
4	66	0	1	0	0	0	Trident (Ant, Elect Dev., uWave, Photo)	0	1
5	27	6	44	8	6	1	Computers	4	59
6	59	32	1	0	1	0	Geoscience & Remote Sensing	0	2
7	27	6	3	6	0	0	Power Engineering, Industrial App.	0	9
8	54	31	11	11	0	1	Electromagnetic Compatibility (EMC)	1	23
9	24	4	3	1	0	0	Power Electronics, Industrial Electronics	0	4
10	6	2	2	0	0	0	Engineering Management	0	2
11	55	37	1	2	0	0	Eng. in Medicine & Biology	0	3
12	0	0	0	0	0	0	Control Systems	0	0
13	24	7	16	4	1	1	Education	0	22
14	7	4	2	0	0	0	Robotics & Automation	0	2
15	46	23	7	0	0	0	Nuclear Plasma Science Society	1	7
16	78	0	1	0	0	0	Computational Intelligence / Sys.Man.Cyber.	0	1
17	0	0	0	0	0	0	Nano Technology Council	0	0
SEM	38	10	5	26	3	0	SEM (Section)	1	34
Tot	684	171	111	72	14	4	NOTE: Highlight Green = Active	8	201
		25%					NOTE: Highlight clear = Concern		

Kudos to our GA's meeting or exceeding our Section technical and administrative goals. Our Section has 5 out of 17 Technical Chapters showing 1 or no technical meetings being held. This is an improvement from last month. There is still a need to plan and conduct meetings before the end of this calendar year. GA leaders please reach out to the TAcom for any assistance. GA members if you have suggestions or requests for technical meetings please contact me via the email below. Your TAcom plans to continue contacting chapters and groups needing assistance in meeting IEEE and SEM Section goals for encouraging member participation and discussions related to the vast amounts of technical and engineering challenges facing our world.

V/r

Jeffery V. Mosley

TAcom Chairman

jvmosley@ieee.org

Attention: Students!

Attention: Opportunity for IEEE SEM Students to become Co-Authors!

Engineering students interested in co-authoring a technical paper in one of the IEEE journals are invited to contact Mike Anthony (maanthon@umich.edu). Mike will be delighted to explain the IEEE paper development and publishing process. Since most engineering students are proficient in web searches, in collaboration with Mike, potential student authors can do either of the following in getting their name tracking in the IEEE bibliography; thereby strengthening the foundation of their careers.

1) Identify an active author in any of the topics in the IEEE power engineering domain and develop a plan for contributing to the research of that author. Mike will arrange introductions.

2) Identify a topic of the student's interest and guide them through the basics of IEEE paper development as a sole author.

3) Assist Mike in his own power engineering research by preparing a bibliographic paper to be published in the Industrial Applications Society or Power Engineering Society Journal. An example line of inquiry would be to identify key concepts in the *2023 National Electrical Safety Code,* the *2023 National Electrical Code* and the *2023 IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems.* Each of these titles are essential standards for the emergent smart grid and have undergone revisions in the past year.

Mike administers the IEEE Education & Healthcare Facilities Commitee which meets 4 times each month. You are welcome to join any of the conference calls or simply send him an email at the address above.

2023 Offficers

Last month we discussed the turnout for our local elections for our 2023 officers. Now we want to acquaint you with the officers who will lead us into the next year.

We begin with the **Executive Committee (ExCom)**.
Our Chair – Sharan Kalwani will continue to guide our Section. Note that Aneesh Mathai will 'train' under Mohamad Berri through 2023 and take over as Vice Chair in 2024.

Note vacancies for both the Assistant positions for Secretary and Treasurer.   Here is an opportunity to volunteer your services and gain valuable experience.

To volunteer for any position, contact the 'Chair' of that organization. For ExCom, contact Sharan Kalwani.

Affinity Groups provide organizations with a common (non-technical) characteristic or interest. We have 4 such groups in our Section shown at the right.

You should notice that most of our Gro-units, (Affinity Groups or Technical Chapters) have open slots indicating that a position is currently vacant and can use a volunteer.

As mentioned above, volunteering for an officer position can open a door to valuable experience on many levels.   However, there are two restrictions:
- Officers must reside within the Section where they serve, and
- Officers must be members of the affinity group or technical chapter to serve in that organization.
Of course all officers must be paid up members of IEEE.

Executive Committee	
Chair	Sharan Kalwani
Chair-Elect	Sharan Kalwani
Secretary	Christopher Johnson
Asst Secretary	
V-Ch	Mohamad Berri
V-Ch-Elect	ANEESH MATHAI
Treasurer	S Ramesh
Asst Treasurer	
Section Adviser	Don Bramlett
Past-Ch	David Mindham

Affinity Groups	
Consultants Network: [CN]	
Chair	Sharan Kalwani
V-Ch	
Secretary	Kimball Williams
Treasurer	
Past-Ch	Kimball Williams
Life Member Affinity Group: [LM]	
Chair	Harpreet Singh
V-Ch	Arun Hundiwal
Secretary	Bhupinder Mavi
Treasurer	Ashok Patel
Past-Ch	Harpreet Singh
Women in Engineering: [WIE]	
Chair	Gozde Tutuncuoglu
V-Ch	ashfiqua connie
Secretary	Sara Masoud
Webmaster	Bige Unluturk
Treasurer	
Past-Ch	Tia Twigg
Young Professionals: [YP]	
Chair	Amar Dabaja
V-Ch	Chris Nelson
Secretary	Looja Tuladhar
Treasurer	Menglou Rao
Past-Ch	Ian Hutt

Each of our Technical Chapters is sponsored by one or more of the IEEE Technical Societies. The society or societies are shown in the name of that Chapter.

When more than one Technical Society is listed, the Chapter is known as a 'Joint' Chapter and its members may be affiliated with any one or all supporting societies.

Notice that Chapter 1 (to the right) is a 'joint' Chapter comprised of three (3) technical Societies.

In cases like Chapter 1, it is usual to have Directors to represent the interests of each of the societies. Directors have unique opportunities for gaining an understanding of the operation of a particular society. Volunteer for any vacancy shown by contacting the listed Chair.

Note that in Chapter 1 there is one officer (Eugene Saltzberg) who is holding more than one officer position. In cases such as this, it presents another opportunity to volunteer and train into a position under the guidance of the current officer who is experienced in those duties and functions. Contact the Geo-unit Chair to discuss options.

How can I contact the Geo-unit Chair? Good question, and I'm glad you asked. The complete listing of all the 2023 officers, along with the email account for each may be found by logging into the SEM Website.
https://r4.ieee.org/sem/

Once you have the SEM Website open locate the list of folders in the top row. Click on the 'About SEM' folder which will open the site with a vast amount of information about our Section.

The item at the very top of the left hand column will be:2023_SEM_Officers.. You will be able to open that file, or download the PDF file directly from:
https://r4.ieee.org/sem/wp-content/uploads/sites/6/2022/11/Organization_Roster_2023_Rev0-pdf-300x232.jpg

Technical Chapters	
Signal Processing, Circuits and Systems and Info Theory: Ch1	
Chair	Jeffrey Dulzo
V-Ch	Sharan Kalwani
Director(SP Soc)	
Director(C&S Soc)	
Director(IT Soc)	
Secretary	
Treasurer	
Past-Ch	
Vehicular Technology Soc: Ch2	
Chair	Mohamad Berri
V-Ch	Sharan Kalwani
Secretary	Eugene Saltzberg
Treasurer	Eugene Saltzberg
Past-Ch	Jennifer Dukarski
Aerospace and Electronic Systems and Communications: Ch3	
Chair	Patrick Seeling
V-Ch	Kevin Taylor
Director(AE Soc)	
Director(Com Soc)	
Secretary	
Treasurer	
Past-Ch	Malcolm Lunn
Antennas and Propagation, Electron Devices, Microwave Theory & Technology and Photonics: Ch4	
Chair	Robert Hipple
V-Ch	Somin Eunice Lee
Director (AP Soc)	Anthony Grbic
Director (ED Soc)	
Director-Tech (MTT Soc)	
Director (Photonics Soc)	Somin Eunice Lee
Secretary	Behnoush Rostami
Treasurer	Menglou Rao
Past-Ch	Rebecca Peterson

If you scan down the About SEM page on the SEM Website you will find many more topics of interest. In particular, the file titled "Organization Roster" contains the listing of all of our SEM Officers for 2022. That file may also be directly downloaded by using the link below:

https://r4.ieee.org/sem/wp-ontent/uploads/sites/6/2022/10/Organization_Roster_10.6.2022_Rev1.pdf

Organization Chairs have full authority to configure their officer corps and recruit and create new positions when their activities require more help.
Chapter 5 is an example of an expanded officer roster with many
specialized positions. Often these positions will change officers every year.

Many Chapters are content to retain the traditional officer arrangement of:
- **Chair**
- **Vice-Chair**
- **Secretary**
- **Treasurer.**

This configuration provides the minimum officer compliment to meet the goals of a meeting that is run by Robert's Rules of Order.
Note all IEEE meetings at all levels are required to adhere to the fundamental structure of meetings spelled out in Robert's Rules.

If you are unfamiliar with Robert's Rules, check out the SEM Website 'Blog' page and the article at the bottom of that page
"IEEE Governance and Roberts' Rules of Order"

With the current expanded use of 'virtual' meetings where the normal 'face-to-face' feedback of facial expressions and body language from the attendees is not as readily available to the meeting Chair and Secretary, 'work arounds' for Robert's Rules have been developed, and are proving successful and are being widely accepted.

Computers: Ch5	
Chair	Subramanian Ganesan
V-Ch	Sharan Kalwani
Secretary	Sharan Kalwani
Treasurer	S Ramesh
Co-Treasurer	
Director: Admin & Member Development	
Director: Technical Activities	
Director: Software Activities	
Director: Auto relations Liaison	
Tech activities Co-ordinator:	
Student & Education Liaison	
Industrial Liaison	
Webmaster	
Past-Ch	Subramanian Ganesan
Geosciences and Remote Sensing: Ch6	
Chair	Leland Pierce
V-Ch	Adib Nashashibi
Secretary	Adam Roberts
Treasurer	Michael Benson
Past-Ch	Adib Nashashibi
Power & Energy and Industrial Applications: Ch7	
Chair	Looja Tuladhar
V-Ch	Sharan Kalwani
Director(Tech Activity)	
Director(Pwr Eng)	
Director(Ind Appl)	
Secretary	Binaya Joshi
Treasurer	Chris Nelson
Past-Ch	David Mindham

Sitting in on Geo-unit meetings is encouraged, especially for students who have yet to settle on their 'Major' field of study. Geo-unit meetings gives the new member a chance to meet and greet other members who have made that Society the focus of their engineering career. By meeting and getting to know the members a new member can get a 'feel' of the type of people have made that Geo-unit their professional 'home'.

Sometimes meeting and getting to know the members in a particular Society will help a new student decide "I like these folks and I find their work interesting." Sometimes the reaction is just the opposite and that is OK. The important thing is a student can make a more informed decision about his career path by knowing the type of people who they would like to work with.

Use the Geo-unit listing and the Officer listing (Organization Roster) and the vTools Events page to find meetings of the Geo-units you are interested in and join them. With so many meetings being held in a virtual format where it is easy to sit in from home, this learning experience may be conducted with minimal extra time and no travel.

Notice also the listing of monthly events in the Wavelengths newsletter. Also listed are the meetings of the Section Executive Committee.

Note: All meetings of the IEEE are open to all members, most of the time. (Occasionally when 'sensitive' topics are to be discussed, a meeting may be held "In Camera" where only the main players may be present. But those meetings are rare and generally of no interest outside the people in the meeting.

Electromagnetic Compatibility: Ch8	
Chair	Scott Lytle
V-Ch	Akio Fujimaki
Director(Prof Activity)	Akio Fujimaki
Director(Tech Activity)	Candace Suriano
Director(Awards)	James Woodyard
Director(Communications)	Scott Lytle
Director(Marketing)	Steve Tomba
Director(Student Activities)	Robert Adams
Secretary	Steve Tomba
Treasurer	James Woodyard
Past-Ch	Dennis Barberi
Industrial Electronics and Power Electronics Societies: Ch9	
Chair	Looja Tuladhar
V-Ch	
Director(IndElect)	
Director(Pwr Elect)	
Secretary	Binaya Joshi
Treasurer	
Past-Ch	Van Wagner
Technology & Engineering Management: Ch10	
Chair	Raymond Sasinowski
V-Ch	
Secretary	
Treasurer	Kellee Christensen
Past-Ch	Mark Robinson
Engineering in Medicine and Biology: Ch11	
Chair	Patrick Rye
V-Ch	Maurice Snyder
Secretary	Yan Yan
Treasurer	
Past-Ch	Maurice Snyder
Control Systems: Ch12	
Chair	Benancio Gonzalez
V-Ch	Mohamad Berri
Secretary	
Treasurer	
Past-Ch	

Scanning through all the listing here you may notice that very few Geo-units are missing one or more volunteers to fill all the officer positions. Or, as you can see in Chapter 16, two volunteers are obviously carrying too many positions, and it is unlikely that they will be able to do as complete a job on all as they could with only one assignment each.

Here is where we hope the members of the supporting Societies for a Chapter will step up and offer to help the Chair.

We are also looking to Chair's who find themselves in a chapter with too few volunteers to effectively run the organization to use the **vTool** system and **eNotice** to direct focused messages that go directly to all the members of their chapter. Messages to Chapter members can appeal directly to members and solicit their help in filling positions.

The case of Chapter 17 is unique in that the previous Chair left the IEEE, and all the past officers could not continue to serve due to work overload. In this case, it will remain to the members of the SEM Nominations & Appointments to contact members of the Nanotechnology Council and see someone who is willing to assume the Chair position, and begin to build a new officer team.

Volunteers willing to step up to Chair Chapter 17 will need to be appointed by **Sharan Kalwani, our Section Chair**.

Education: Ch13	
Chair	Sharan Kalwani
V-Ch	Manohar Das
Secretary	
Treasurer	Sharan Kalwani
Past-Ch	Richard Johnston
Robotics And Automation: Ch14	
Chair	Chan-Jin Chung
V-Ch	ALI EYDGAHI
Secretary	Jonathan Berent
Treasurer	
Past-Ch	
Nuclear Plasma Sciences: Ch15	
Chair	Robert Hipple
V-Ch	
Secretary	
Treasurer	
Past-Ch	
Computational Intelligence & Systems, Man & Cybernetics: Ch16	
Chair	Jeffery Mosley
V-Ch	Jeffrey Dulzo
Director(CI Soc)	Jeffery Mosley
Director(SMC Soc)	Jeffrey Dulzo
Secretary	Jeffrey Dulzo
Treasurer	Jeffrey Dulzo
Past-Ch	
Nanotechnology Council: Ch17	
Chair	
V-Ch	
Secretary	
Treasurer	
Past-Ch	

A series of classes covering:
- Officer functions (All positions),
- Management tools (vTools suite, Webex & ZOOM),
- Team building, and
- Time management will be offered in January 2023.
Watch for announcements in Wavelengths and on the SEM Website.

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47 CFR § 97.1

47 CFR § 97.1 – Amateur Radio Service:
The 'CFR' above refers to the United States 'Code of Federal Regulations', and Section (§) 97.1 lays out the Basis and purpose for the existence of Amateur Radio (Hams) as a federally recognized service according to five clear and distinct principles:

(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.
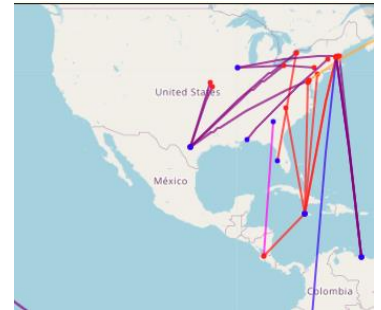

The prime example of emergency preparedness is the existence of hundreds of Ham traffic 'nets' that daily practice sending messages just to keep everyone well trained in emergency procedures. In the US this is known as the 'National Traffic System'.

(b) *Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.*

Independent amateur radio operators set up an network of scanning receivers that watch communications on all major communications bands and send reports on the stations they year to a central internet server which provides information back to the Ham on signal strength and location of the receiving station allowing real time evaluation of equipment, antennas and propagation conditions. This system is called the 'Reverse Beacon Network, (RBN) and is a free service to the entire community sponsored solely by Hams.
Hams also developed an extremely low power system called WISPR which works similarly to the RBN but with such low power that it is impossible for the signal to interfere with any normal communications.

(c) *Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.*

Ham radio clubs have long provided 'spotters' along routes of bicycle and marathon foot races to look for anyone needing help or assistance and Hams are a normal part of any Civil Air Patrol (CAP) search and rescue team looking for downed aircraft, and lost hikers in remote wilderness areas.

New innovative equipment such as the recent introduction of 'NANO-VNA, small hand held vector network analyzers which provide many of the same features of expensive laboratory grade equipment at a fraction of the cost is just one example. Kits for transceivers (and other support equipment) have become very popular encouraging many a Ham to develop skills with a solder iron and an understanding of electronics and RF communications that only comes with "Hands On" experience. Hams also have a long tradition of sharing their knowledge through teaching classes, or other individuals about radio communications.

(d) *Expansion of the existing reservoir within the amateur radio service of* <u>*trained operators, technicians, and electronics experts.*</u>

The military has long depended on the ranks of Hams to provide the corps of 'experienced' personnel to provide hands on training for equipment maintenance and operation.
This has been particularly evident during periods of national conflict when Hams have formed the corps of military communications units, and especially the teachers for others since their practical experience and

(e) *Continuation and extension of the amateur's unique ability to* <u>*enhance international goodwill*</u>.

Hams converse on a daily basis with their counterparts all over the planet and exchange greetings, weather and signal reports, news of the day, opinions about their equipment, antennas, Morse code keys, contact logging software, photos of their families and friends, kits they have built, etc.. Long lasting friendships have been built this way spanning continents, oceans, and language barriers.

That joy of communication even travels beyond the earth's atmosphere since there are always active Ham operators aboard every crew on the International Space Station (ISS) who delight school children in every country with contacts on a regular basis.

These five principles have been, and continue to be, the rationale behind why the Amateur Radio service continues to grow and engage children of all ages.
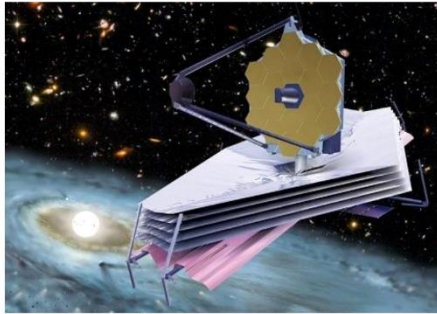
Kim N8FNC

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JWST Repeat Screening

IEEE Southeastern Michigan
Presents:
The Ultimate Space Telescope: A Documentary

Recently, as part of an innovative and fresh approach, i.e. a non-traditional meeting event: we presented video documentaries. This was very warmly received. So, we decided to continue the good work. We proudly present the documentary: The Ultimate Space Telescope.

Summary:
Follow the dramatic story of NASA's James Webb Space Telescope (affectionally known as JWST) – the most complex machine ever launched into space – in hopes of peering deeper back in time than ever before and answering some of astronomy's biggest questions. For more details about the JWST – read the article published in IEEE Southeastern Michigan's monthly newsletter – Wavelengths, July 2022 edition. (the URL of which can be found below)

https://r4.ieee.org/sem/wp-content/uploads/sites/6/2022/07/07_2022_WL_Rev1.0.pdf

At Glance

• **When:**
Date: Dec 9, 2022
Time: 05:30 – 7:00 PM (EST/EDT)

• **Where:**
Online via Webex (to be shared only after you have a confirmed registration)

• **Audience: OPEN to ALL***

Sponsored by
IEEE
SE Michigan
Education Society
Chapter

*Pre-Registration Required!

https://events.vtools.ieee.org/m/334630

This Month in December

Or: I Did Not Know This! ☺

December 2, 1942 - Physicists led by Enrico Fermi carried out the world's first successful nuclear chain reaction at the University of Chicago.

December 2, 1982 - The first permanent artificial heart was implanted in 61-year-old Barney C. Clark by Dr. William De Vries at the University of Utah Medical Center in Salt Lake City. Clark, who was near death at the time of the operation, survived 112 days after the implantation.

December 6, 1877 - At his laboratory in West Orange, New Jersey, Thomas Edison spoke the children's verse "Mary had a Little Lamb..." while demonstrating his newly invented phonograph which utilized a revolving cylinder wrapped in tinfoil to record sounds.

December 9, 1993 - A five-day repair job in space on the $3 billion Hubble Space Telescope was finished by U.S. astronauts.

December 10, 1896 - Swedish chemist Alfred Nobel died at San Remo, Italy. His will stipulated that income from his $9 million estate be used for awards recognizing persons who have made valuable contributions to humanity. Nobel recipients are chosen by a committee of the Norwegian parliament. Prizes for Peace, Physics, Chemistry, Medicine, Literature and Economics are presented annually in a ceremony in Stockholm, Sweden, on the anniversary of his death.

December 11, 1901 - The first transatlantic radio signal was transmitted by Guglielmo Marconi from Cornwall, England, to St. John's, Newfoundland.

December 14, 1962 - The Mariner II space probe sent back information from the planet Venus, the first information ever received from another planet.

December 17, 1903 - After three years of experimentation, Orville and Wilbur Wright achieved the first powered, controlled airplane flights. They made four flights near Kitty Hawk, North Carolina, the longest lasting about a minute.

December 23, 1947 - The transistor was invented at Bell Laboratories by John Bardeen, Walter Brattain and William Shockley, who shared the Nobel Prize for their invention which sparked a worldwide revolution in electronics.

December 23, 1642 - Birthday - Isaac Newton (1642-1727) was born in Woolsthorpe, Lincolnshire, England. He was a mathematician, scientist and author, best known for his work *Philosophiae Naturalis Principia Mathematica* on the theory of gravitation. He died in London and was the first scientist to be honored with a burial in Westminster Abbey.

December 27, 1571 - Birthday - German astronomer Johannes Kepler (1571-1630) was born in Wurttemberg, Germany. Considered the father of modern astronomy, he discovered the elliptical (oval) shape of the orbits in which the earth and other planets travel around the sun at a speed that varies according to each planet's distance from the sun.

December 27, 1822 - Birthday - French chemist-bacteriologist Louis Pasteur (1822-1895) was born in Dole, France. He developed the pasteurization process to kill harmful bacteria with heat and found ways of preventing silkworm disease, anthrax, chicken cholera, and rabies.

December 31, 1879 - Thomas Edison provided the first public demonstration of his electric incandescent lamp at his laboratory in Menlo Park, New Jersey.

This continues the yearlong feature of interesting *engineering* events or milestones that occurred in a specific month. Readers are invited to share their views and opinions (or suggestions) at the accompanying link. Submissions can also be made using direct email to the editors at: wavelengths@ieee-sem.org.

Sharan Kalwani
Just one of the Editors, Wavelengths,
2022 Chair, Southeastern Michigan Section
Passionate Engineering History Buff/Aficionado

RoboFest News

(1) 2023 Season Rules Released!!
(2) Pre-season Workshop Schedule Announced
(3) MCWT Grants for All-Girl Robofest Teams
(4) Warmup Competition/Judge Training February 11
(5) LTU Scholarship Opportunity for all Robofest Participants
(6) Seeking Site Hosts for 2023 Competitions
(7) Robofest Digital Pen Pal Opportunity

Note: All times are listed in EST unless noted

(1) 2023 Season Rules Released!!
The 2023 Official Game Rules, General Rules and other category rules have been uploaded to the Robofest
website. This years game, *Supply Chain Challenge* will task teams to move, stack and sort
objects to th*e* Port, clear obstacles and supply the Store. We have also added a Junior Age Division to the RoboMed
category.

Our final kickoff meeting to review the rules for clarification prior to the final release in will be held Saturday, January 7,
2023: 11:00 am ~ 12:30 pm EST in the Robofest Lab on LTU campus and Zoom. Directions to the meeting and a Link to
the Zoom webinar are posted on the Robofest.net 2023 Main page.

(2) Pre-season Workshop Schedule Announced
Workshops are available at no cost to registered 2023 Teams. They are held in the Robofest Lab on LTU Campus, robots
and laptops are provided. Recordings can be requested if teams cannot travel to LTU.
> VEX IQ with VEX Code
>> Saturday, 1/14/23: 9:00 am ~ 12:00 noon
>> Saturday, 2/25/23: 1:00 pm ~ 4:00 pm
> LEGO EV3 with Scratch
>> Saturday, 1/14/23: 1:00 pm ~ 4:00 pm
>> Saturday, 1/28/23: 9:00 am ~ 12:00 noon
> LEGO Spike Prime with Scratch
>> Saturday, 1/28/23: 9:00 am ~ 12:00 noon
> LEGO Spike Prime with Python
>> Saturday, 2/25/23: 1:00 pm ~ 4:00 pm

To register for a workshop first register for a qualifier (pre-registration is open), the go to
https://www.robofest.net/rms/SharedPagesServlet?cmd=getWorkshopsTable

(3) MCWT Grants for All-Girl Robofest Teams
The Michigan Council of Women in Technology Foundation, 19-year sponsor of Robofest, is once again providing $500
grants for up to ten Michigan all-girl Robofest teams for the 2023 Robofest Game and Exhibition competitions. More
information, the 2023 season application and deadline will be posted soon to their webpage:
https://mcwt.org/programs/list/K-12-Initiatives/ROBOTICS-GRANTS

(4) Warmup Competition/Judge Training February 11
This event will be held on Saturday, Feb 11, 2023 from 3:00pm ~ 5:30pm in Room J234 in the Taubman Complex. Teams
who would like to participate should send an email to spalonis@ltu.edu. Check-in for registered teams begins at 1:00 pm
and Judge training will start at 1:45 pm. We encourage Michigan Site Hosts and Volunteer Game Judges to attend.
Registration will open in Mid-December for judges

(5) LTU Scholarship Opportunity for all Robofest Participants
High School students who have participated in Robofest at any time and who are planning to attend LTU in any program,
can apply for a $3,000 renewable scholarship (Total of $12,000). Submit a 400-word essay describing your Robofest
experience and your career goals, a letter of recommendation from one of your Robofest adult coaches or mentors, and

the Scholarship Application by **April 1, 2023.** To find more information
visit: https://www.ltu.edu/financial_aid/scholarships-freshmen.asp

(6) Seeking Site Hosts for 2023 Competitions
Robofest is seeking site hosts for the 2023 Competition Season for Robofest Game and Exhibition Qualifiers as well as BottleSumo and RoboParade Open events for the 2023 season. We hope to have all sites registered and ready for team registration, which is set to open in early November 2022. Interested individuals, organizations, or schools should contact the Robofest office at spalonis@ltu.edu or visit https://robofest.net/index.php/for-site-hosts

(7) Robofest Digital Pen Pal Opportunity
To enhance the Spirit of Robofest for all participants, we would like to facilitate a new Digital Pen Pal program. We will pair up interested teams with one another so teams may collaborate and build international network opportunities. More information and registration information will be announced on the website after 12/1.

Lawrence Technological University / Robofest / J-233 / 21000 W. Ten Mile Rd, Southfield, MI 48075
Dr. Christopher Cartwright, Director, ccartwrig@ltu.edu
Elmer Santos, Assistant Director, esantos@ltu.edu
Shannan Palonis, Coordinator, spalonis@ltu.edu
Pam Sparks, Coordinator, psparks@ltu.edu
Dr. CJ Chung, Advisory Board Chairperson (Volunteer), cchung@ltu.edu

Frank Sprague: Documentary

IEEE Southeastern Michigan
Presents:
Engineering Pioneer: Frank Sprague

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Recently, as part of an innovative and fresh approach, i.e. a non-traditional meeting event: we presented video documentaries. This was very warmly received. So, we decided to continue the good work. We proudly present the documentary: Engineering Pioneer – Frank Sprague.

Summary:
Over the course of a little less than twenty years, inventor Frank J. Sprague (1857-1934) achieved an astonishing series of technological breakthroughs--from pioneering work in self-governing motors to developing the first full-scale operational electric railway system--all while commercializing his inventions and promoting them (and himself as their inventor) to financial backers and the public.

At Glance

- **When:**
  Date: Dec 6, 2022
  Time: 05:30 – 7:00 PM (EST/EDT)

- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)

- **Audience: OPEN to ALL***

Sponsored by
IEEE
Education Society
Chapter

*Pre-Registration Required!

https://events.vtools.ieee.org/m/334628

IEEE Education Society

IEEE Southeastern Michigan Section

IEEE Advancing Technology for Humanity

Section Conference

IEEE Southeastern Michigan Spring Conference ◆IEEE

Theme: *Powering the Future of Engineering*

Topics planned are:

Electric Vehicles, Connected Vehicles,

Areas of Electrical/Electronics/Computer Engineering & Science

Keynote Presentations, Student Poster, Recruitment, Social Networking,

Section Activity, Dinner, Award, Chapters Collaboration

Event Date: March 28th, Tuesday, 2023 4 to 8 pm

Venue: TBD

Save the Date
March 28th, Tuesday, 2023

Contact: conference@ieee-sem.org   https://events.vtools.ieee.org/m/328899

ORG UNITS cheat sheet

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit code is in parentheses)
Consultants Network Affinity Group: (CN40035)
Life Members: (LM40035)
Young Professionals: (YP40035)
Women in Engineering: (WE40035)
Chapter: 01 (CH04049)(SP01) Signal Processing Society, (CAS04) Circuits and Systems Society and (IT12) Information Theory Society
Chapter: 02 (CH04051)(VT06) Vehicular Technology Society
Chapter: 03 (CH04053)(AES10) Aerospace and Electronic Systems Society and (COM19) Communications Society
Chapter: 04 (CH04050)(AP03) Antennas and Propagation Society, (ED15) Electron Devices Society, (MTT17) Microwave Theory and Techniques Society,
Chapter: 05 (CH04055)(C16) Computer Society
Chapter: 06 (CH04056)(GRS29) Geosciences and Remote Sensing Society
Chapter: 07 (CH04057)(PE31) Power Engineering Society, (IA34) Industrial Applications Society
Chapter: 08 (CH04088)(EMC27) Electromagnetic Compatibility Society
Chapter: 09 (CH04087)(IE13) Industrial Electronics Society, (PEL35) Power Electronics Society
Chapter: 10 (CH04142)(TEM14) Technology and Engineering Management Society
Chapter: 11 (CH04099)(EMB18) Engineering in Medicine & Biology
Chapter: 12 (CH04103)(CS23) Control Systems Society
Chapter: 13 (CH04113)(E25) Education Society
Chapter: 14 (CH04115)(RA24) Robotics And Automation Society
Chapter: 15 (CH04144)(NPS05) Nuclear Plasma Sciences Society
Chapter: 16 (CH04125)(CIS11) Computational Intelligence Society, (SMC28) Systems, Man and Cybernetics Society
Chapter: 17 (CH04128)(NANO42)Nanotechnology Council

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit code 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)

Use the Geo-unit 'Code' for faster access in the vTools system applications.

HKN Code	HKN Name (Student IEEE Honor Society)
HKN029	University of Michigan-Ann Arbor, Beta Epsilon
HKN042	University of Detroit-Mercy, Beta Sigma
HKN054	Michigan State University, Gamma Zeta
HKN073	Wayne State University, Delta Alpha
HKN163	University of Michigan-Dearborn, Theta Tau
HKN164	Lawrence Institute of Technology, Theta Upsilon
HKN190	Oakland University, Iota Chi
HKN244	Southeastern Michigan Alumni

Organization Unit IEEE Code	Student Technical Chapter name
SBC00531	University of Detroit-Mercy, Computer Society Chapter
SBC02251	Wayne State University, Computer Society Chapter
SBC03921	Lawrence Tech University, Computer Society Chapter
SBC06741	Oakland University, Engineering in Medicine & Biology

Why do we publish this? Well, this is most useful when searching the vTools page for entering L31s or creating new events or searching for existing events!

Curated & Maintained By
Sharan Kalwani,
Chair, IEEE SE Michigan Education Society Chapter
Vice-Chair, IEEE SE Michigan Computer Society Chapter
Editor, Wavelengths,
2018~2019~2020~2021~2022

Use the Geo-unit 'Code' for faster access in the vTools system applications.

Activities & 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. **NOTE: The IEEE SE Michigan section website is located at http://r4.ieee.org/sem/**

SEM Wavelengths:
https://r4.ieee.org/sem/about-sem/sem-history/wavelengths-magazine-archive/

SEM Calendar of events:
https://r4.ieee.org/sem/sem-calendar/
Select "SEM Calendar" button in the top row of the website. 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 Collabratec Workspace:
https://ieee-collabratec.ieee.org/app/workspaces/5979/IEEE-Southeastern-Michigan-Section/activities
An IEEE supported space for online chat, discussions, connecting with other global IEEE entities, besides our local Michigan folks.

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

Other Happenings

Here are some of the non-IEEE functions that may be of interest to you or someone you know. 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. NOTE: Copy the URL and paste it into your browser address bar.
These websites were checked in June 2022 and found viable.
Send details to: wavelengths@ieee-sem.org OR letters@ieee-sem.org

Michigan Institute for Plasma Science and Engineering: Seminars for the 2021-2022 academic year:
https://mipse.umich.edu/seminars_2122.php

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

Model Rocketry
https://www.nar.org/find-a-local-club/nar-club-locator/

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
https://www.robofest.net/index.php/about/contact-us

Science Fiction Conventions
https://2021.penguicon.org/

http://www.confusionsf.org/

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

ESD PE Review Class
https://www.esd.org/programs/pe/

Maker Faire:
https://swm.makerfaire.com/

It appears that the SouthWest Michigan Maker Faire was a casualty of the Global Pandemic, as were many of our friends and several organizations.

However, we retain this link for anyone wishing to make contact and consider pumping life back into what was a wonderful experience.

Executive Committee

The SEM Executive Committee is the primary coordination unit for Southeastern Michigan (SEM) IEEE operations. The basic organization chart below shows the 2019/2020/2021/2022 arrangement of communications links designed to provide inter-unit coordination and collaboration.

The SEM Executive Committee meets in a teleconference each month on usually on a Thursday at 6:30 pm. The specific meeting days, times, phone or WebEx numbers and log in codes are published on the IEEE SEM Website calendar: **http://r4.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 **Christopher Johnson**, the section secretary at secretary@ieee-sem.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.
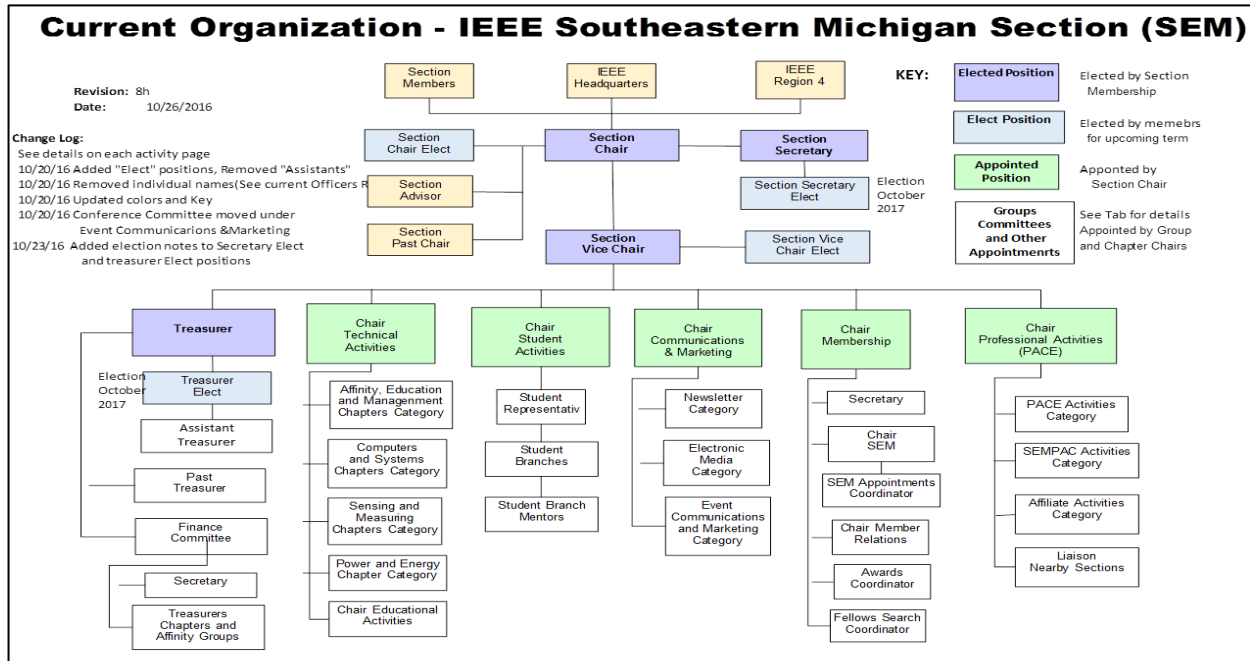
However, members of the section may have multiple technical interests and would like to have meeting information of other chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to 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://r4.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.

Christopher Johnson (Secretary)
Email: secretary@ieee-sem.org

If you wish to download the complete SEM Organization Chart, in PDF format, it will be made available soon at http://r4.ieee.org/sem/ . In the meantime, you may use the diagram below (soon to be refreshed!)

ExCom Meeting Schedule

NOTE: All SEM members are invited to attend ALL ExCom (Executive Committee) meetings:

Below is the 2022 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. Please mark your calendars for the 2022 meetings. Or, link your personal calendar to the SEM Web calendar.

Section Administrative Committee (ExCom) Meeting Schedule for 2022:

Note: All IEEE Members are welcome at any IEEE meeting, at any time but please register so we can be sure to accommodate you. This month's meeting is highlighted in **Bold**.

ExCom Meeting	Date & Time
Dec 01,2022 - SEM Section ExCom Monthly Meeting (Teleconference) for December 2022 https://events.vtools.ieee.org/m/289877	6:30 PM

Section Administrative Committee (ExCom) Meeting Schedule for 2023:

ExCom Meeting	Date & Time
SEM SECTION EXCOM MONTHLY MEETING (TELECONFERENCE) FOR JANUARY 2023	05 Jan 2023 06:30 PM

Christopher Johnson (Secretary)
Email: secretary@ieee-sem.org

Editorial Corner

Previous editions in this series may be found on the IEEE SEM website at: http://r4.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
sharan.kalwani@ieee.org
d.romanchik@ieee.org
nilesh.dudhaia@ieee.org
k.williams@ieee.org
cgjohnson@ieee.org
lunnmalcolm@me.com
akio@emcsociety.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.

We always encourage all chapters and student branches to share news of activities (both past and future) in their arenas. Please feel free to share any and all information so your peers, colleagues can hear about all the good work you do.

 Quote*:*
"If a tree falls in a forest and no one hears it, how do you know it actually fell??"

So, publicize your work, one never knows when it can pay off!

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.

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

Sharan Kalwani,
Chair, IEEE SE Michigan Education Society Chapter
Vice-Chair, IEEE SE Michigan Computer Society Chapter
Co-Editor, Wavelengths,
2018~2019~2020~2021~2022

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	New Year Officers	Officer's Welcome	The Year Ahead	
Feb	Cons	2		MSU	Science Fair Judges	National Engrs Wk.	Surviving Winter	
Mar		3	13	EMU	Elections - Prep			
Apr		4		U/M-D		ESD Gold Awards	Chapter Focus	
May	Life	5	14			Science Fair		
Jun		6					Leadership Skills	
Jul		7	15				Students Issues	
Aug	WIE	8			Nominations Call		Womens Issues	
Sep		9	16	LTU	Ballots	Engineers Day?	Professional Skills	
Oct		10		U/M-AA	Elections!	IEEE Day		
Nov	YP	11	17	WSU	Election Results	New Fellows		
Dec		12		U/D-M	IEEE-Com Apmts.		Happy Holidays	R4 Nom

Wavelengths Annual Publication Plan for Personal Profiles

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

Web & Social Sites

SEM Website
http://r4.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 " f " button under the top row)
https://www.facebook.com/groups/ieeesemich

SEM LinkedIn Page
(Select the " in " button under the top row)
https://www.linkedin.com/groups/1766687/

SEM Twitter Account (new)
(Select the " 🐦 " button under the top row)
https://www.twitter.com/ieeesemich

SEM Collabratec Workspace (new)
https://ieee-collabratec.ieee.org/app/workspaces/5979/IEEE-Southeastern-Michigan-Section/activities

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 "Organization Roster"

Section Officers

Section Chair
Sharan Kalwani

Section Vice-Chair
Mohammad Berri

Section Secretary
Chris Johnson

Section Treasurer
Ramesh Sethu

Standing Committees:

Section Adviser
Don Bramlett

Wavelengths Editor
Sharan Kalwani

Chair Educational
Christopher Guirlanda

Chair Finance Committee
Subra Ganesan

Chair Membership Development
Mohamad Berri

Chair Nominations & Appointments
Kimball Williams

Chair PACE
Sharan Kalwani

Chair Student Activities
Mel Chi

Student Communications Coordinator
Michael Anthony

Student Representative
Mohd Faisal

Chair Technical Activities
Jeffery Mosley

IEEE Southeastern Michigan

Electrical and Electronic Engineers Creating Our Future

IEEE Southeastern Michigan

Visit Us on the Web at:
http://r4.ieee.org/sem

Behold my new cryptocurrency Buttcoin

Leadership Meetings

SEM Executive Committee Monthly Teleconferences:
- 1st Thursday of Each Month @ 6:30 PM
- Check the Section Web Calendar at:
  http://r4.ieee.org/sem/sem-calendar/
  (Select the "SEM Calendar" button in the top row.)

SEM Executive Committee Meetings:
- Find the location, and Registration at:
  http://bit.ly/sem-ieee

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://r4.ieee.org/sem/
  (Select the "SEM Calendar" button in the top row.)

- Registration for all at:
  http://bit.ly/sem-upcoming