



The Southeast Michigan Section in 2001-2002

Maurice F. Snyder, SM, Chair, SEM Section



I welcome all IEEE members and prospective members in Southeast Michigan to a new year. As you may know the IEEE, with approximately 350,000 members worldwide, is one of the largest, if not the largest, technical organization in the world. IEEE divides the world into 10 regions, and our SEM Section with about 3500 members is the largest section in Region 4.

We just completed our Fall Section meeting

with one of the highest attendance in recent years (over 115) and this was our first Section meeting in Canada. We were honored this year with the IEEE president-elect, Dr. Ray Findlay. This is the first time we had the IEEE president or president-elect as speaker and he is from Canada. My thanks and appreciation goes to the whole committee who made this Section meeting one of our most successful. Our thanks and appreciation also goes to Prof. Phil Alexander and the University of Windsor who hosted the meeting. I invite you all to attend our next Section meeting in the spring – details to be announced soon in Wavelengths.

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An Invitation to Members to Explore Serving as an IEEE/SEM Section or Chapter Officer

John M. Miller, IEEE/SEM Past Chair

It's only been a quarter year since the present officers assumed office, but it is time to look ahead to our leadership for the 2001-2002 program year. The IEEE/SEM Executive Committee invites you to discuss opportunities in leadership at either the section or chapter level with any of our officers. Should you have a colleague that you think may have an interest in serving as an officer, we invite both you and your colleague to join us in dinner.

As I have noted in the past, serving as an IEEE/SEM officer is a way to meet and work with enthusiastic and proactive section members. It is a way to network with local professionals, meet internationally known technical experts, utilize planning and organizational skills, and yes, have fun while growing professionally. It is also an opportunity to be

involved in section planning of our spring and fall meetings in which internationally renowned experts and personalities are invited to give keynote addresses. Terms of office begin July 1, 2001 and last one year for all officers except section directors, who are elected to two-year terms. The deadline for nominations is December 15, 2001.

Consider becoming active with a chapter that deals with a technical area of interest to you if your time is really limited and you are somewhat reluctant to take on additional responsibilities. Serving as a chapter officer is a good way to meet colleagues working in a technical area, learn about IEEE/SEM and decide if you would like to become a section officer at a later time. If you have had some

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WAVELENGTHS

Somebody Upstairs Cares

Engineering Management Society Discussion of the Hawthorne Effect on December 11th

Can productivity be increased simply by analyzing work processes and the people performing the tasks? How do the relationships that supervisors develop with their workers influence the manner in which the workers carry out directives? How does the social aspect of a workplace affect productivity? Do nice guys sometimes finish first? The Hawthorne Effect answers these questions and describes other phenomena related to the increase in worker productivity produced by the psychological stimulus of being singled out and made to feel important.

The Hawthorne Studies were conducted by Professor Elton Mayo of the Harvard Business School at the Western Electric Hawthorne Works in Chicago from 1927 through 1932. Mayo examined the fluctuations in output due to changes in working conditions. He discovered that regardless of the changes made, productivity improved due to several factors. Chief among these was the teamwork of the individuals, their increased self-esteem due to their selection to this important project, and their

desire to please a popular supervisor and a popular observer. A sense of belonging to a team and a feeling that "somebody upstairs cares" about their well-being led to better job performance.

To learn more about the Hawthorne Effect, the Engineering Management Society (Chapter X) invites you to participate in our informal and friendly discussion on December 11th. We will be meeting at Veridian in Ann Arbor at 6:30 PM. For more information and directions to Veridian, please visit our website: www.ewh.ieee.org/r4/se_michigan, or contact our officers:

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SEM Section in 2001-2002

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I encourage all IEEE members to renew their membership on-line – it's much quicker than mailing in the renewal form with a check, etc. To renew a membership on line, go to: <http://www.ieee.org/membership/renewal/>. It's really quick and easy.

For both new student and new regular members to join, I would recommend you also go online to: <http://www.ieee.org/membership/join/>.

I am happy to announce the formation of a new Chapter, EMB-18, on Engineering in Medicine and Biology. The focus of the chapter is fairly self-explanatory – the application of engineering to medicine and biology. We currently have 10 chapters in SEM Section and this will be Chapter 11. This formation was due to the efforts of David Stiles, Oakland University (dkstiles@oakland.edu) – thanks David. If you have an interest in this area and wish to become active in bioengineering, contact David Stiles at the above email.

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IEEE/SEM Chapters

I Circuits & Signal Processing: Acoustics, Speech &

Signal Processing (ASSP-01), Circuits & Systems (CAS-04),
 Information Theory (IT-12) and Control Systems (CS-23)

II Vehicular Technology: Vehicular Technology (VT-06)

III Comm. & Aero. Electronics: Aerospace & Electronics Systems (AES-10) and Communications (COM-19)

IV Trident: Electron Devices (ED-15), Microwave Theory & Techniques (MTT-17) and Antennas & Propagation (AP-03)

V Computer: Computer (C-16)

VI Geoscience & Remote Sensing: Geoscience & Remote Sensing (GRS-29)

VII Power Eng. & Ind. Apps.: Power Engineering (PE-31) and Industrial Applications (IA-34)

VIII EMC: Electromagnetic Compatibility (EMC-27)

IX Power & Ind. Electronics: Power Electronics (PEL-35) and Industrial Electronics (IE-13)

X Engineering Management: Eng. Management (EM-14)

Wavelengths

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Section: www.ieee.org/regional/section/se_michigan

IEEE: www.ieee.org

IEEE Region 4: www.ieee.org/regional/r4/



Calendar of Events

Monday **Event:** SEM Executive Committee Meeting
Dec. 3rd **Time:** Dinner at 6:00 pm, Meeting 6:30 pm
Location: Eaton Corp, 26201 Northwestern Hwy, Southfield, MI
Contact: Kimball Williams,
 k.williams@ieee.org,
 248-354-2845

Agenda available online Tuesday, December 4, 2001

Tuesday **Event:** **The Hawthorne Effect**
Dec. 11th **Sponsor:** Chapter X, The Engineering Management Society
Time: 6:30 pm
Location: Veridan in Ann Arbor
Contact: Steve Kishok
 kishoks@ta.com.army.mil,
 810-825-4458),
 Liang Downey lxdowney@us.ibm.com,
 248-552-4878),
 Marty Biancalana
 biancalana@ieee.org,
 734-994-1200).

To Be Determined **Event:** **A Tutorial on CISPR Radiated Emissions**
Speaker: Fred Bauer
Location: Eaton Corp, 26201 Northwestern Hwy, Southfield, MI
Contact: Scott Lytle, 248-354-5245,
 S.R.Lytle@IEEE.org

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A Course in Creative Thinking

Hassan Hassan, Ph.D., PE
IEEE/SEM Student Activities Director
Lawrence Technological University

The October 2001 IEEE Southeastern Michigan International Section Meeting was very successful with eight technical papers that covered a large spectrum of electrical and computer engineering. In the Student Track chapter I have presented a paper entitled "Creativity, Innovation, and Problem Solving-An Introduction." Once I returned from this significant meeting, I have submitted to the College of Engineering at Lawrence Technological University, a proposal for a new course in Creative Thinking.



Rapid evolution in Engineering makes a degree in any field of Engineering inadequate for lifetime career. With very competitive job market, companies are seeking more and more engineers with exceptional talents, who possess innovative skills and can form new ideas and bring these ideas to reality. One company advertises "Innovation, a fancy word for change, a must in today's evolving world, a core for our business." Other company says "Creativity, innovation, knowledge, enthusiasm.....bring it." Another company advertises "Scaling new heights with an inventive spirit." Clearly there is a huge demand for innovative engineers who can add to a thriving technology new ideas and products to take this technology to a higher level of excellence. Therefore the need for a course in "Creative Thinking" is essential for all engineering students and practicing engineers at all levels.

A course in Creative Thinking will broadly explore the concepts of creativity, innovation, and problem solving to assist every student and practicing engineer in any field to release their innate abilities to create and innovate. The course topics would include: definitions and differences between creativity and innovation; why Creativity is important? why innovation is necessary in modern society? factors that boost and improve creative thinking; factors that limit creative thinking; the brain

and the creative process; humor and creativity; keeping a diary; creative people; how to define problems? how to solve conflict without trade-off? how to develop a new generation of products? techniques for creative thinking; generation of ideas by random input; generation of ideas by problem reversal; generation of ideas by "ask questions" technique; generation of ideas by applied imagination and imitation; generation of ideas by the discontinuity

principle; generation of ideas by check lists; generation of ideas by brainstorming; generation of ideas by forced analogy and attribute listing; generation of ideas by metaphorical and morphological analysis; generation of ideas by mindmapping and storyboarding; the "DO IT" approach; Synectics; unconscious problem solving; simplex; fuzzy thinking; solving conflicts and systematic generation of ideas using TRIZ method; creation, protection, and exploitation of ideas; patents, copyrights, trademarks, and trade secrets; creative advertising and promotion; negotiation of sale of creative ideas; creative games and examples; and creative project.

Creativity is a process of generating and manifesting new ideas, while innovation is taking creative ideas to reality in any practical, mathematical, or physical shape and form. Ideas may come immediately and in an infinite small unit of time, while applications can take days, months, years, or even lifetime to realize. Innovation also may consist of several phases and may utilize other ideas and concepts previously invented.

There are many factors that may boost and enhance one's creativity including:

- Gentle exercise helps stimulate the brain and takes it into a generative mode, how many ideas you had while you are walking, jogging,

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A Course in Creative Thinking

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gardening, hand-washing cloths or dishes or even driving?

- Listen to a smooth lyric-free music, a type of music that put your brain in the generative mode to enhance thinking and the process of idea creation.
- Since ideas come and go in seconds or a fraction of a second, it would be constitutive to record every idea that come to your mind by carrying a small colorful notebook and pen, or a mini-cassette recorder.
- Define your problem, you may find many positive ideas once you have done so.
- Reading is a golden key, the more you read the better you will be, concentrate on transactions, journals, scientific books, and patents. Reading is the best exercise that stimulates the brain.
- Avoid everything that makes the brain idle and ineffective such as TV, drugs, liquor and other toxicants.
- Exercise your brain by talking to educated people, attend conferences and seminars, listen to other people discoveries and innovations, get involved, you will not believe the amount of ideas that you may generate.
- Travel has a great impact on many people thinking. It is very stimulus to one's brain and really puts in the mode of creating new ideas and concepts. Travel helps you to refresh your outlook and expose you to new people, customs, ideas and way of life and living.
- Creative games and puzzles are excellent brain exercises.
- Hobbies such as watching birds, painting, drawing, and sculpture can provide another dimension to take the brain to the generative mode.
- Brainstorming is a process used to generate a large number of ideas in a group of specialist based on a chain of action and reaction. It is a marvelous way to solve problem and come with new ideas and concepts or evaluating existing ideas.
- Select a word in random from a bag full of words or from a dictionary. Generate ideas incorporated with

this word or around it and see how these ideas solve the problem on hand.

- Since the brain is an ultra-super computer that no human being can make, and since children got brains with no encumbrance and stress, playing imagination games with your children is an excellent way to bring you back to your own imagination. Ask them why, where, when, who, what, and how?
- Ask "WHY?" As many times as you need till you reach the root of your problem, then reverse engineer it to create a solution.
- Writing is considered to be a basic factor in creative aptitude especially when you publish what you write.
- Humor means having fun and creativity needs a big dose of fun and play.
- Cartoons enhance creative thinking and view life from many angles, from the serious to the humorous.
- Self-confidence is an essential component of creative thinking. Do not fear criticism, and on the other hand avoid ego. Admit it when you are wrong and say "I do not know" when you are asked and really you have no clue!
- Read a patent, a scientific paper, a concept, an idea, a theory, a design, or a system from a book or any publication and in any field of interest and ask yourself how you can modify, magnify, rearrange, revise, substitute, adopt, put to other use, combine, and/or minify so you can generate a new design, a new idea, a new theory, a new concept, or even a new product?

This course will strive to build up the students' belief and self-confidence in the quality and the merit of their own ideas. Any dismissal to any creative idea as worthless, even once, can mean that other ideas that could be valuable will never be stimulated. Creative thinking is a flame in every one of us, just we have to keep it lit. For any inquire, please email me at h.hassan@ieee.org.

Invitation to Members

Continued from page 1

experience with a professional group, then consider becoming a section officer. Section and chapter involvement is also an excellent opportunity to elevate your standing in IEEE should you wish to become a senior member or fellow of IEEE.

You can nominate yourself or have someone else nominate you. Nominations are needed for the following offices:

IEEE/SEM Section Officers

- Chair
- Vice Chair
- Secretary
- Treasurer
- Educational Activities Director (2 year term)
- Student Activities Director (2 year term)

Chairs, Vice Chairs and Secretaries for IEEE/SEM Chapters

Chapter I:	Circuits & Signal Processing
Chapter II:	Vehicular Technology
Chapter III:	Comm. & Aero. Electronics
Chapter IV:	Trident
Chapter V:	Computer
Chapter VI:	Geoscience & Remote Sensing
Chapter VII:	Power Eng. & Ind. Apps.
Chapter VIII:	EMC
Chapter IX:	Power & Ind. Electronics
Chapter X:	Engineering Management

The duties of officers are described online at www.ewh.ieee.org/r4/se_michigan/.

Please contact me if you have any interest in serving as an IEEE/SEM officer. I will also invite you as our guest for dinner and a meeting of the IEEE/SEM Executive Committee. During dinner you will be able to meet colleagues and discuss your interests and the needs of the section. The dates of executive committee meetings are announced in *Wavelengths* and on the section's Web site. Remember, **nominations must be submitted before December 15, 2001**. The nomination form is available online in Adobe Acrobat and Microsoft Word Format www.ewh.ieee.org/r4/se_michigan/.

Contact John M. Miller at jmille24@ford.com or 313-322-7486 for a dinner invitation, further information on serving as an officer or to request a nomination form.

Reminder: Soliciting Nominations For IEEE Awards

John M. Miller, IEEE/SEM Past Chair

Time is running short to nominate a deserving colleague for recognition in his/her professional activities. I wish to reiterate the previous call for nominations by repeating the nomination areas and criteria. The IEEE/SEM awards committee is soliciting nominations from our membership in the following areas:

Outstanding Engineer: This award is presented to a member who has demonstrated outstanding service or accomplishment in the electrical, electronic, or computer engineering profession. The award recognizes such long-term achievement in business, academia and private enterprise though patents, publications, development of standards, encouragement of student interest in the profession and other professional endeavors.

Outstanding Section Involvement: The award serves to acknowledge a member who has been active in section activities and has gone beyond the norm in leadership, participation and accomplishments at the section level.

Outstanding Chapter Involvement: This award is presented to a member whose commitment and dedication to one of the IEEE/SEM technical chapters, is deserving of special recognition for leadership, enthusiasm and accomplishments in chapter activities and programs.

Outstanding Student Branch Involvement: This award is presented to a student branch, student branch member, section member, or a student branch counselor/advisor in recognition of their leadership, participation, support, or accomplishments relating to the operations and programs of a student branch and for promoting the engineering profession among students. More than one award may be presented in any year.

Nominators are asked to adhere to the following minimum set of rules:

1. All nominees and nominators must be members or student members of IEEE/SEM in good standing.
2. Nominations must be submitted on IEEE/SEM forms and address the criteria above for each award.
3. Nominations must be received on or before the scheduled dates listed below to be considered for an award. Late submissions will not be acknowledged.

The deadlines for submission are:

Outstanding Engineer by Monday, December 3, 2001

Outstanding Section Involvement and **Outstanding Chapter Involvement** by Monday, December 3, 2001

Outstanding Student Branch Involvement by Friday, February 8, 2002

Award nomination forms can be downloaded from the IEEE/SEM Web site, www.ewh.ieee.org/r4/se_michigan/. Completed nominations must be received by John M. Miller on or before the deadlines above; they may be emailed to jmille24@ford.com. The IEEE/SEM awards committee appreciates your efforts and we encourage all our members to recognize their deserving peers by nominating them for an award. Thank you.

Involvement and Success

*Dr. Hassan Hassan, PE
IEEE/SEM Student Activities Director
Lawrence Technological University*

Research has shown that a student involvement in campus branch activities can assist in one's connection to campus and in one's success in classroom. Being involved is one of the most important aspects of student college education at all levels: undergraduate and graduate. It enables student to mature personality, intellectually, socially and technologically.

Involvement enhances student opportunities for career development exposing students to various skills, which will help them when they graduate to find gainful employment. Giving your talent to your IEEE Student Branch and IEEE organization will not only help that branch, it will make the college experience to all students, a valuable and enjoyable one.

Students' activities in IEEE organization provide a variety of experiences that will compliment students' academic lives and better prepare them to serve the world as engineers, scientists and leaders. Leadership involves character and the six pillars of character are trustworthiness, respect, responsibility, fairness, caring and citizenship. Leadership is about being agents of change to promote knowledge and science to all fellow men. IEEE student members should work to make a significant difference in our world. Leadership should be inclusive not exclusive, valuing diverse voices, ideas, and perspectives. Leadership is service not gain. It is action not position. It is deeds not empty words. Anyone can be involved in the process of leadership. Get involved!

A major concern to all students and especially new students is how to meet people and make good friends to enhance their college experience and to achieve the highest level of success in the classroom. The answer is simple, Get involved @ IEEE . Students who become involved in IEEE student branch and IEEE activities

are more likely to continue through graduation. The reason is that they develop ties and friendships which help them anchor into the college. Consequently, those ties and friendships act as sources of support during the difficult moments of students' college lives. A simple conclusion one can make here is that the college support to IEEE student branch is a viable solution to the retention problem.

Through involvement, you are likely to meet fellow students who share similar interests in the fields of electrical engineering, computer engineering, and computer science. In addition you may share common interests and ideals. Through tutoring sessions and seminars organized by IEEE student branch or section, all members shall excel and succeed.

Through involvement in IEEE activities, students will not only acquire skills and values which will enhance their growth and development, but also enable them to fulfill their civic and social responsibilities. These skills and values include: creativity, innovation, problem solving, interpersonal skills, organization, team work and participating attitudes.

The education and personal development through IEEE organizational activities can be important to students' career. Alumni surveys have shown that the skills student learned through their involvement are very helpful in getting their first job, and their moving up the career ladders.

As IEEE/SEM Student Activities Director, I strongly support and encourage involvement in IEEE extracurricular activities, considering them an important part of the student's education and training. I am ready to serve and help all IEEE student branches and members in any appropriate way. I am ready to meet with all IEEE student officers, give talks and presentations, and answer all questions. I can be reached at 248-204-2554 or by e-mail: h.hassan@ieee.org.

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