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SUNCOAST



IEEE

SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>

Volume 46 - No. 11

November 2003

Joint LIFE Member & Section Meeting

Guided Tour of MOTE Marine Laboratory Including Aquarium, Marine Mammal Center and Science Labs

Date/Time: Thursday, 13th November 2003 at 11:30 AM
Location: 1600 Ken Thompson Parkway, Sarasota, FL. 34236.
Cost: \$15.00 per person. Includes GOURMET Box Lunch.

Mote Marine Laboratory is a renowned institution for marine scientific research with a worldwide reputation. Shark research and Red Tide studies are just a few of the projects. The Aquarium has a display of local and exotic sea creatures that make it a prime tourist attraction in the Sarasota area. Watch Manatees munch their lunch of cabbages and lettuce. Mote also nurses sick mammals back to health in the Mammal Center. Learn about Aquaculture Research (fish farming) that is being done to replenish the stocks of Snook and other species in the Gulf. After the tour feel free to wander through the Aquarium, and visit with the fish at your leisure. Mote Marine has a large staff of volunteers who donated their time to help with the research. Are you interested? Contact Jules Joslow for more details.

Directions: From Route 75 take Exit 210 (Fruitville Road) west to Route 41 (Tamiami Trail). Turn left for one traffic light getting into right most lane ASAP. Turn right and follow that road over the NEW FIXED BRIDGE to St. Armand's Circle. At the circle take the first exit to the right (Columbia Restaurant on corner). Continue on that road to the right turnoff just before the bridge to Longboat Key. That is Ken Thompson Parkway. The third driveway on right is the entrance to Mote's parking lot. Large blue signs says Aquarium. Meet at the Whale Fountain just in front of the main entrance.

Reservations: Make reservations on line: <http://www.weiquality.com/fwcs-meetings/>
or call Jules Joslow at (800) 274-2383. Nov. 10 is last day to make reservations.

Checks: Checks should be made out to FWCS-IEEE and sent to Jules Joslow, 6931
Langley Place, University Park, FL. 34201 or brought to the meeting.

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THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues. The opinions expressed, as well as the technical accuracy of authors, advertisers or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied. All material for THE SUNCOAST SIGNAL is due by 10th day of the month preceding the issue month. Address all correspondence to:

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Chair's Comments

By John Conrad

Does anyone want to play golf? It occurs to me that we, the FWCS members, do a lot of serious stuff. We attend technical meetings. We hold technical conferences etc. but maybe we would like to something a little lighter now and again.

Many organizations run golf leagues and hold annual golf tournaments etc. Is that something we want to do? Do we want to form a league that meets maybe once a month and occasionally issue challenges to other technical societies? I know the ISA society (Instrumentation, Systems and Automation) already holds an annual golf day. ASHRAE also has a few golfers. Maybe they would be interested in playing the IEEE FWCS. If anyone is interested in pursuing this idea give me a call or send an E-mail.

Unfortunately Rosemary Dakos, has found it necessary to scale back her IEEE duties and has resigned her position as Membership Development Chair, MDC. I would like to thank her on your behalf for all her hard work and I hope she stays in touch with the section activities.

I asked Tom Blair to take over the duties of Membership Development Chair and I am pleased to announce he has accepted the position. If you are interested in upgrade your membership to the Senior Level or have any questions regarding your membership, please contact Tom at tom_blair@ieee.org.

2004 Review Seminars For PE Electrical & Computer and EIT/FE APRIL 16 and 17 Examinations

Review seminars for the PE (Electrical and Computer) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will be held:

Mondays, January 19 thru March 22 for the EIT/FE Exam & Thursdays, January 8 thru March 25 for the EE Exam. Seminars are conducted from 7-10 P.M. (Monday or Thursday) for ten weeks for the FE and twelve weeks for the EE. The registration fee is \$395 and includes text. The seminars will be held on the main USF campus in Tampa and **will also be available via Internet.**

To register, contact: Edward Scott, P.E., PO Box 14042, (EC37), St Pete, FL 33733.

Edward.Scott@pgnmail.com

Phone (727) 384-7544, FAX (727) 384-7865
Pinellas Chapter, Florida Engineering Society (PES).

PL-UG Fest 2003
Wednesday, November 19th, 8 AM
Holiday Inn, Clearwater, FL
3535 Ulmerton Road

The Programmable Logic Users Group (PL-UG) and the Florida West Coast IEEE Computer Society Chapter are jointly holding a full day of presentations for designers and users of FPGA, CPLD and other programmable devices. Applications engineers will be presenting information on programmable devices from Xilinx, Lattice, and other vendors including Aldec, Nallotech, and Siliconexion. Also, there will be a presentation on transmission line calculations and considerations for high-speed Low Voltage Differential Signaling (LVDS). Don't miss this opportunity to see the latest technology and tools.

Please RSVP early to: clifford.kimmery@honeywell.com

IEEE FWCS Science Fair Report
By Carlomagno B. Dionson

We need more volunteers to be judges in various county fairs. Most of the fairs will start around late January or early February. A science fair FAQ is being created for those who are unfamiliar with how the judging process works. The site is available at: <http://www.dionson.com/ieeefair>.

Charlotte and Lee counties will be holding their fair with two other counties. They normally need around 100-150 judges to make things go smoother. It would be great to get a decent IEEE representation in the judging process. I am in the process of acquiring the judging handbook for this fair. I will post up information from it on the website as soon as it arrives.

Also, if you have any introductory books or literature, pictures, posters, or videos on anything related to electricity (e.g. generation, distribution, transmission, etc.), Mr. Kaykon Nedza would like to have them for an electrical energy class that he is starting sometime in Spring 2004. Please contact me if you are willing to donate something.

Any comments, questions, or suggestions can be directed to carlomagno@ieee.org or you can call me at 813-621-5935.



ASME International

**The Basics of Facility Lightning
and Surge Protection**

Speaker: Mr. Frank Dlouhy, Omega Power Systems

Join the FWCS of ASME when they host Mr. Frank Dlouhy, the President of Omega Power Systems, to discuss Facility Electrical Protection. He will give a basic overview of a six point plan that integrates the capture and dissipation of lightning strikes, eliminates ground loops and protects equipment from the surges, transients, and catastrophic damage caused by lightning.

More information on the topic, payment, cancellation policy and on-line reservations at www.weiquality.com/asme. For those who do not have internet access, please call Helen Prince at 727-734-5546 for reservations.

Date: **Wednesday, November 19, 2003**

Location: Radisson Hotel, 20967 U.S. Hwy 19 N., Clearwater, FL

Time: 6:00 pm Social, Dinner served at 6:30 pm

Price: Members and guests \$18.00 per person, includes tax and gratuity. Student Members \$9.00

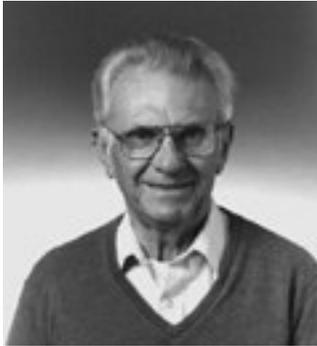
S-PAC 2003

Register at: <http://www.weiquality.com/fwcs-students>

Information

Date Nov. 14, 2003
Time 11:00am – 3:00pm
Location ENA 105
Cost \$2 for IEEE members
\$4 for non-members

The University of South Florida's Institute of Electrical and Electronics Engineers, Inc. branch is proud to bring you the Student Professional Awareness Conference. Increase your chances of getting a job by receiving valuable tips from two national speakers from Arizona and Michigan. This event is highly recommended for those who are almost graduating and getting ready for the real world. Learn to handle job search obstacles. Get yourself ready. Be prepared. Think S-PAC!



What's Ahead: Overview of Engineering Careers

Dr. Marlin Ristenbatt will talk about private versus public employment sectors, different career stages (apprentice, independent contributor, project leader, and manager), and engineering practices such as taking responsibility for your career and improving your value.

Achievements: Co-founder of USAB Career Maintenance and Development Committee and inventor of signaling method applied in personalized digital communications



A Professional Adventure: Your Job Search

Michael Andrews, president of Andrews & Associates LLC, will discuss the six phases of securing employment upon graduation. The presentation begins with academic performance in school, progresses through research and selection of companies, discusses successful interviewing, and concludes with company selection and personal growth.

Achievements: Former Vice President and Managing Partner of Advanced Interaction Management and General Manager of Training and Development for Nissan, and a Senior IEEE member



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Substation Automation & SCADA

PES/IAS FWCS

Date& Time Wednesday, November 5, 2003 11:45 AM – 1PM
Subject: Substation Automation & SCADA
Speakers: John McDonald, P.E.
Location: Seminole Electric, 16313 N Dale Mabry Hwy
Cost: \$10 members, \$15 non members, \$5 students
Reservations: On-line at http://www.ewh.ieee.org/r3floridawc/pes_titles.html or Call Ghaff Khazami at (813) 960- 0990, E-mail gkhazami@ieee.org

PES West Coast Chapter invites you to a Luncheon meeting and a chance to learn the latest on the subject of Substation Automation and SCADA systems.

The speaker will cover the latest trends on the Automation of substations and SCADA interface. Automation Technology is rapidly growing in the utility industry along with other industries and it is to your advantage to keep up with the changes.

Speaker: **John D. McDonald, P.E.**, is Senior Principal Consultant and Manager of Automation, Reliability and Asset Management for KEMA, Inc. In his over 29 years of experience in the electric utility industry, John has developed power application software for both Supervisory Control and Data Acquisition (SCADA)/Energy Management System (EMS) and SCADA/Distribution Management System (DMS) applications, developed distribution automation and load management systems, managed SCADA/EMS and SCADA/DMS projects, and assisted Intelligent Electronic Device (IED) suppliers in the automation of their IEDs. John is currently assisting electric utilities in substation automation, distribution SCADA, communication protocols and SCADA/DMS.



John received his B.S.E.E. and M.S.E.E. (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. John is a member of Eta Kappa Nu and Tau Beta Pi, is a Fellow of IEEE, and was awarded the IEEE Millennium Medal in 2000, the IEEE PES Excellence in Power Distribution Engineering Award in 2002, and the IEEE PES Substations Committee Distinguished Service Award in 2003. In his seventeen years of Working Group and Subcommittee leadership with the IEEE Power Engineering Society (PES) Substations Committee, John led seven Working Groups and Task Forces who published Standards/Tutorials in the areas of distribution SCADA, master/remote terminal unit (RTU) and RTU/IED communications.

John is Secretary of the IEEE PES, is Co-Vice Chair of IEEE Standards Coordinating Committee (SCC) 36, is Corresponding Member to IEC Technical Committee (TC) 57 Working Group (WG) 11, and is the Immediate Past Chair of the IEEE PES Substations Committee. John is a member of the Advisory Committee for the annual DistribuTECH Conference and is a charter member of *T&D World* magazine's International Editorial Advisory Board.

John teaches a SCADA/EMS course at the Georgia Institute of Technology, a Substation Automation course at Iowa State University, and substation automation, distribution SCADA and communications courses for the American Public Power Association and for various IEEE PES local chapters as an IEEE PES Distinguished Lecturer. John has published twenty-one papers in the areas of SCADA, SCADA/EMS, SCADA/DMS and communications, and is a registered Professional Engineer (Electrical) in California, Pennsylvania and Georgia.

John is co-author of the book *Automating a Distribution Cooperative, from A to Z*, published by the National Rural Electric Cooperative Association Cooperative Research Network (CRN) in 1999. John was Editor of the Substations Chapter, and a co-author, for the book *The Electric Power Engineering Handbook*, co-sponsored by the IEEE PES and published by the CRC Press in 2000. John is Editor-in-Chief, and Substation Integration and Automation Chapter author, for the book *Electric Power Substations Engineering*, published by the CRC Press in June 2003.

Directions: Seminole Electric Cooperative Inc, 16313 North Dale Mabry Hwy, from I 275 take Bearss exit go west about 4 miles to Dale Mabry Hwy and Ehrlich intersection turn north, pass two traffic lights at the 3rd light turn right Lakeview to the parking area



Implementing an Electrical Safety Program
Bruce McClung, IEEE IAS Distinguished Lecturer

- Date:** Monday, November 17, 2003
- Location:** TECO Hall, Tampa Electric Company, 702 N. Franklin Street, Tampa
- Time:** Lunch 11:45, Speaker 12:00
- Cost:** Members \$10, non-members \$15, student members \$5
- Registration:** Pre-registration is required.
Register online <http://www.weiquality.com/fwcs-meetings/>
Limited to 35 participants

Parking: Metered street parking is available. Reasonably priced parking is also available at the Ashley Street Garage next to the Public Library, approximately two blocks from TECO Plaza.

Questions? Contact Art Nordlinger a.nordlinger@ieee.org

Following development of an Electrical Safety Program, it must be accepted and implemented. Developing an Electrical Safety Program is an Employer's responsibility. "Implementing an Electrical Safety Program" is a joint responsibility of the employer and the employee. Partnering in the implementation process leverages the assets of all individuals involved. Employers provide the resources needed to motivate and train employees regarding safety related work practices. Employees recognize the benefits, assimilate the training, become "qualified", and take personal responsibility for the safety of themselves and their co-workers. Implementation is based on all parties understanding the program, the policy, the philosophy, the principles, the procedures, the performance metrics, and the overall planning needed in advance and just prior to every job. Best of all - a shared culture of "safety first" i.e. "if it is not safe - don't do it" develops. Changes may be needed to existing electrical systems and equipment and intermediate changes may be required in new design and construction to facilitate electrical safe work practices that protect personnel from making contact with exposed energized electrical conductors and circuit parts, as well as protecting them from any electrical arc flash hazards.

L. Bruce McClung, IEEE Fellow, retired from Union Carbide Corporation (UCC), now Principal Consultant with Electrical Safety Consulting Services, Inc. He joined UCC in 1960 and In 1997 he became the first electrical engineer to be named a Corporate Fellow there. Widely respected as a technical leader in the application of electric power systems on an industrial scale, Mr. McClung has provided electrical technology support for the design, construction, operation and maintenance of large chemical and plastic plants. His work in advancing technology, standards, and work practices has dramatically improved electrical safety. Safety-enhancement technologies he helped to develop include high-resistance grounding, arc-resistant switchgear, zero-halogen insulating compounds for wire and cable, and thermal protective clothing. Mr. McClung presently serves IEEE as a member of the Standards Association Board of Directors and as the Distinguished Lecturer on Electrical Safety Issues for IAS/PES 2002-2003. Mr. McClung has authored or co-authored 28 technical papers, 18 of which have made IEEE-IAS Transactions Status, while 9 earned IEEE-IAS prize paper awards. He received the IEEE Standards Medallion, the IEEE Charles Proteus Steinmetz Award, the 2000 PCIC Electrical Safety Excellence Award, the 2001 IEEE Medal for Engineering Excellence and the 2001 IAS Outstanding Achievement Award. He also received Union Carbide's Chairman's Award, and has been elected a member of West Virginia University Academy of Electrical and Computer Engineers. He is a Registered Professional Engineer in the State of West Virginia.

Students Corner

IEEE Student Branch Chapter, USF

IEEE officers have been attending various Leadership Workshops throughout the past month; our officers were in Orlando on Saturday October 11th, for an IEEE sponsored Leadership Training guide where we learned invaluable information in terms of running an effective student branch. On the 18th October, our officers split up as one group headed to an IEEE Volunteers in Philanthropy Training session and the others to a Student Government sponsored Leadership Workshop. These sessions are not limited to IEEE members or officers. For anyone interested in attending such workshops, please contact Angela or Kristy at ieee@eng.usf.edu.

On Friday, November 14th, the student chapter at USF will be hosting a Student Professional Awareness Conference. The event will start at 11:00 am and end at 3:00 pm. It will be held in ENA 105 and will feature three guest speakers. Dr. Marlin Ristenbatt will lead a discussion on an Overview of Engineering Careers and Dr. Michael Andrews will discuss the 6 Phases of Securing Employment upon Graduation. Mr. Art Nordlinger, president of the PES/IAS society will lead a third discussion. There is a small fee associated with this event, \$4, for non-members and \$2 for all IEEE student members. This is a great event for all students to attend and it promises to be full of invaluable information. Students can begin registering for the event at www.weiquality.com/fwcs-students.

As we come to the end of the Fall semester, the IEEE student branch, in keeping with tradition, would like to invite all graduating seniors in Electrical Engineering as well as all interested students and faculty and staff to attend our semi-annual Senior Banquet. This year it will be held on Friday December 5th 2003. The place and the time will be announced shortly. For more details please contact Angela or Kristy at ieee@eng.usf.edu.

IEEE Computer Society Student Branch Chapter, USF

IEEE-CS student chapter at the University of South Florida had a great start off session with a talk by Dr. Rangachar Kasturi, who has just joined as the chair of CSE Department of USF. Dr. Kasturi is the Publications Vice President for IEEE. He has enlightened the students about IEEE and encouraged them to join IEEE for their professional growth.

Some really interesting events are planned: On Thursday, October 23rd, The Tampa FBI CART (Computer Analysis and Response Team) will give a presentation at USF campus on data recovery, digital forensic evidence, investigations and careers. During the first week of November, the IEEECS student group plans to be in Orlando for an onsite visit of the IT division of Lockheed Martin Inc. Later in the November, Dr. Bhavani Thuraisingham will be giving a presentation on Data Management, Data Mining, and Data Security.

Coming Soon!!

CELEBRATE ENGINEERING AWARDS DINNER

Friday, February 13, 2004

At the **A La Carte Pavilion** on Dana Shores Drive, Tampa.

- Keynote speaker
- Lignell Awards for Science & Math Teachers,
- Engineer of the Year Awards
- Special Awards
- Vendor Displays
- Musicians & Entertainers

..... and a excellent dinner all contribute to this excellent evening celebrating the engineering achievements that have brought countless benefits to our society. In 2003 we had over 300 attendees! Plan to attend and bring your spouse. This event is planned, organized and executed annually by the volunteers of the Florida West Coast Sections of IEEE, ASME, AFE, ASHRAE and SOLE.

Brain Teaser Challenge Column

By Butch Shadwell

August BTC Solution

The BTC last month was about interplanetary travel, in a very simplified form. It had to do with the fact that Mars is in perigee and what if visiting Martians were traveling in a spacecraft as described. “It is a mere 30 million miles away...accelerate your craft at a constant rate of 9.8 meters per second squared, how long will it take to arrive and stop at Mars orbit? Fortunately, you can swing your ship around so that the thruster can be used to slow as well as speed up your ship. For extra credit, tell the highest speed your ship will reach on this trip. Let’s ignore the fact that the target is actually moving during this flight and any gravitational effects. If you’re really feeling intelligent today, tell me the total amount of energy used for the trip in kilowatt-hours if our craft has a mass of 5000Kg.”

This one takes more number crunching than most, so here we go. First the acceleration curve is only half the trip long, so I convert 15E6 miles into 24.1E9 meters. Then we know that $X=1/2(At^2)$, so $t=(2X/A)^{1/2}$. We get $t=70.1E3$ seconds for half the journey. This means that the whole trip takes about 39 hours. In case you didn’t catch it, 9.8 m/s^2 also happens to be the rate at which the pavement accelerates toward your face when you trip over the chalk line in a field sobriety test. Then $V=At$, since the highest speed is at the midpoint we get $V_{\text{max}}=687E3 \text{ m/s}$ or 1.54E6 mph (c/435). Note that we are also ignoring the relativistic change in mass of our spaceship. So for the last part you should know that 1 watt-second = 1 joule = 1 Newton-meter. Our ship’s engine is exerting a constant force of 49E3 Newtons for the entire trip ($F=ma$). Times the distance of 48.2E9 meters, we get 2.36E15 watt-seconds. After one more conversion we get 656E6 KWH, but I bet you already knew that. – Live long and prosper.

September BTC

The last BTC took a lot of calculating. I think I may have worn the lettering off of a couple of the keys on my calculator doing that one. But these things are fun for me too. At the time I am writing this, I have received two answers with everything correct. I am impressed with our brilliant membership.

Speaking of brilliant members, there are certain creatures that have the ability to glow in the dark. I can remember some kids taking the tails off of lighting bugs to make glow-in-the-dark rings. I never got into this as it seemed kind of cruel and an awful waste of a really neat lightning bug. These are the same kids that used to vandalize peoples homes on Halloween. I think I started with an idea of how to segue into the problem below, but I’ve been sick lately.

If we have a voltage source of 1-volt p-p at 159kHz, fed through a non-reactive resistance of 1000 ohms into a capacitive load of .001 μ F, what is the phase difference between the current and the voltage waveform across the capacitor? Then what is the peak-to-peak voltage of the signal at that node?

Reply to Butch Shadwell by November 20 at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution

IEEE FWCS Volunteer Needed for Promotion of Advts. in SIGNAL

Need a volunteer member who would be willing to promote the sales of advertisements in SIGNAL, the newsletter of the IEEE FWCS. Help is needed to draft a form letter to send to all area technical and engineering companies making them aware of advertising opportunities in the SIGNAL.

Career Opportunities

Beckwith Electric Co., Inc., located in Largo, Florida, is a leading manufacturer of innovative high quality products, technical services and solutions for the electric utility industry. We are seeking qualified candidates for the following positions.

PRODUCTION TEST ENGINEER

Responsible for developing cost effective, production-worthy and quality test solutions for Production. Responsible for defining and improving manufacturing test processes of both circuit board assemblies and completed products. Collaborates with design engineering and manufacturing engineering to proactively define production test flows, software test routines, and hardware designs that support effective and efficient manufacturing tests. Test designs include automated test configurations. Responsible for coordinating these development activities to drive improved quality, reduced costs, and improved production flexibility. BSEE and minimum 7-10 years experience in test development for broad range of analog and/or mixed-signal products, and comprehensive understanding of electrical circuits and analog and/or mixed-signal integrated circuits. Must have working knowledge of test instrumentation such as 3-phase test systems (Doble, Avo, Omicron) in the electric power industry.

ENGINEERING LAB TECHNICIAN

Performs routine tasks in testing engineering prototypes of Power System Protective Relays and Controls. Types of testing include: EMC, hypot, transient, environmental, and complex functional test routines. In addition, performs the following on solid state and digital electronic equipment: installation, repair and troubleshooting assemblies to the component level. Knowledge of testing of electrical protective relays and controls at the prototype level. General electronics knowledge that applies to Beckwith products is a plus. Associate's degree in electronics or equivalent from two-year college or technical school, and three to five years experience in an electronic test environment and/or in electric utility control and protective relaying, or equivalent combination of education and experience.

Looking for a Job/Internship?

Reynolds, Smith, and Hills, Inc. is an Architectural, Engineering, Planning, and Environmental firm with locations throughout the state of Florida, Texas, North Carolina, Illinois, and Michigan. They are currently searching for many entry level engineers and architects. *Visit them online at <http://www.rsandh.com> or send your resume by email to employment@rsandh.com Mailing address: 10748 Deerwood Park Boulevard South, Jacksonville, Florida 32256 FAX: 904-256-2520. Electronic Resumes are preferred.*

USF Dept., of Electrical Engineering Fall 2003 Seminar (Nov/Dec Schedule)

| Meeting Date | Day | Speaker | Location | Title of the talk |
|--------------|-----|----------------------|------------------------|--|
| 11/13/03 | Thu | Dr. Steve Sadow | USF, ENB 113, 2pm | TBA - SIC or related |
| 11/20/03 | Thu | Dr. Huseyin Arslan | USF, ENB 113, 2pm | Ultra-wideband and Impulse Radio for Wireless Communications |
| 11/27/03 | Thu | Thanksgiving Holiday | | |
| 12/05/03 | Fri | EE Students | USF, ENB Hall of Flags | 9th Mini-Circuits EE Projects Poster Presentation |

Any questions, please contact Dr. Rudy Henning, EE Dept, USF. Email: henning@eng.usf.edu, Phone: (813)-974-4782.

November 2003 Calendar of Events

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|---|---|---|--|---|----------|
| 30 | | | | | | 1 |
| 2 | 3 | 4 <i>FWCS Excom Meeting, 5:30pm TECO Hall</i> | 5 <i>Substation Automation & SCADA; 11:45-1pm Seminole Electric</i> | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 <i>MOTE Marine Lab Tour 11:30am, Sarasota USF EE Seminar Dr. Sadow, 2pm USF</i> | 14 <i>SPAC 2003 11-3pm USF Campus</i> | 15 |
| 16 | 17 <i>Implementing an Electrical Safety Program, 11:45am, TECO Hall</i> | 18 | 19 <i>PL-UG Fest 2003; Clearwater, 8am. Basics of Facility Lightning, Clear-Water; 6pm.</i> | 20 <i>USF EE Seminar; Dr. Arslan, 2pm, USF.</i> | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |

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Florida West Coast Section
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Sections Congress 2005 is coming to Tampa!

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 Or fax your address changes to (732) 562-5445