



2013

Tennessee Tech University
Cookeville, Tennessee

E4 *Efficient
Effective
Engineering
Education*

MARCH 10-13, 2013

ASEE

Southeastern Section Annual Conference



TENNESSEE TECH
UNIVERSITY

College of Engineering

ASEE 2013 Conference Schedule At-A-Glance

ASEE 2013 Conference Schedule At-A-Glance			
Sunday, March 10			
9:30 AM	5:00 PM	Registration	Prescott Hall Lobby
10:00 AM	5:00 PM	Workshops	Prescott Hall/Oakley STEM Center Classrooms
2:30 PM	5:00 PM	Executive Board Meeting	Prescott Hall Dean's Conference Room
5:00 PM	5:15 PM	Load Buses for Reception	Prescott Hall Parking Lot
6:00 PM	8:30 PM	Welcome Reception	Appalachian Center for Craft
Monday, March 11			
7:30 AM	8:00 AM	Breakfast	Oakley STEM Center Lobby
8:00 AM	8:30 AM	Division & Unit Meetings	Oakley STEM Center Lobby
8:30 AM	8:45 AM	Walking Time	
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11:40 AM	12:30 PM	Student Poster Session	Oakley STEM Center Classrooms
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6:00 PM	9:00 PM	Reception & Awards Banquet	DelMonaco Winery & Vineyards
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10:25 AM	11:45 AM	Technical Session 5	Prescott Hall Classrooms
11:45 AM	12:00 PM	Walking Time	
12:00 PM	1:15 PM	Lunch and Business Meeting	Oakley STEM Center Lobby

ASEE SOUTHEASTERN SECTION ANNUAL CONFERENCE

MARCH 10-13, 2013



Tennessee Tech University
Cookeville, TN

Proceedings Editor:	Barbara Bernal Southern Polytechnic State University
Technical Program Chair:	Hodge Jenkins Mercer University
Site Coordinator:	Steven Click Tennessee Tech University

CHAPTER 1

Conference Information

University Welcome



Office of the Dean • *College of Engineering*

Box 5005 • Cookeville, TN 38505-0001 • (931) 372-3172 • Fax (931) 372-6172

www.tntech.edu

March 10, 2013

Dear 2013 ASEE Southeastern Conference Attendees:

On behalf of the faculty, staff, and students of the College of Engineering and the entire Tennessee Tech University community, welcome to the 2013 ASEE Southeastern Section Conference. We are all very delighted about having you on our campus!

The theme for this year's conference is "E⁴ Efficient Effective Engineering Education." In light of the current economic climate, this topic has become a challenge for engineering educators. Resources have declined since 2008; undergraduate engineering enrollment has grown 17% while the faculty has remained flat. This poses the question "How can we effectively, efficiently educate engineers in this environment?" I am looking forward to hearing about your innovative solutions throughout the conference!

Cookeville is home to roughly 30,000 people and is located in the scenic Highland Rim of the Cumberland Plateau. Tennessee Tech is the only technological university in the state, with an enrollment of 11,500 students. The College of Engineering has 2,500 students and is the second largest engineering program in Tennessee. The College offers BS, MS and PhD degrees in Civil Engineering, Chemical Engineering, Computer Science, Electrical Engineering and Mechanical Engineering, along with BS degrees in Computer Engineering and Engineering Technology. Our vision is "21st Century Renaissance Engineers Revolutionizing Engineering to Solve Societal Problems." The mission of 21st Century Renaissance Engineers is to use innovation in both problem solving and technology, making the world a better place to live. They carry new discoveries from basic scientific research into technological products, devices, systems and services that benefit society at the state, national and global levels. Learn more about our strategic plan at www.tntech.edu/engineering/strategicplan/.

Before I close, I'd like to thank each of you for attending this conference and bringing your expertise to our gathering. You, as engineering education leaders, have the vision, the knowledge, the wherewithal and the experience to help us pave our way into the future. You are truly our greatest asset today and tomorrow, and we could not accomplish what we do without your support and leadership. Throughout this conference, I ask you to stay engaged, keep us proactive and help us shape the future and the direction of engineering education. We look forward to relaxing, sharing and learning alongside you.

Best regards,

A handwritten signature in black ink that reads "Joseph J. Rencis". The signature is written in a cursive style and is enclosed within a thin black rectangular border.

Joseph J. Rencis, Ph.D., P.E., F.ASEE, F.ASME

Dean of Engineering and Clay N. Hixson Chair for Engineering Leadership

Conference Welcome

Welcome to the 2013 ASEE Southeastern Section Annual Conference: *Efficient and Effective Engineering Education*. Amid an increasingly hostile political environment and seemingly constant fiscal belt tightening, engineering schools are still called upon to provide proof of continuous improvement and effectiveness within engineering education. While this dichotomy between reduced resources and increased demands may seem untenable for many of our colleagues, engineers are quite familiar with the tension between performance and cost. We have long been experts at finding efficiencies that yield systems that meet both performance and cost targets.

Thank you for joining your colleagues from around the Southeastern United States to discuss the efficiency and effectiveness needed in engineering education today. I trust that you will find workshops, presentations, discussions, and networking opportunities that stimulate new ideas for your classroom and that provide encouragement for your continued dedication to students and the learning process.

This conference is the result of long hours of planning and preparation on the part of many dedicated people. I especially thank the Conference Site Chair, Steven Click, and his TTU team for organizing the site logistics; the Technical Program Chair, Hodge Jenkins, and his team of division chairs, reviewers, paper authors, and moderators for providing an engaging technical program; the Workshop Coordinator, Stephen Canfield, and the workshop presenters for providing a wide variety of presentation topics; the Awards and Recognition Unit Chair, Richard Mines, and his team of award reviewers for recognizing outstanding contributions to engineering education in our section; the Research Division Chair, Tom Fallon, and his team of division officers, students, and faculty advisors for organizing and participating in the student poster session; the Campus Representatives Coordinator, John Brocato, and his team of camps reps. for promoting section activities within our universities; and the section officers and executive board for providing clear and informed leadership to our section.

The activities of the Southeastern Section are dependent on many volunteers joining together to tirelessly donate their time and expertise in support of engineering education. If you are a veteran member of our section, thank you for your involvement in division, unit, and section activities. If you are a newcomer, then I encourage you to join your colleagues by volunteering to work as a division officer in the area of your choice. During Monday morning's breakfast, cross-disciplinary divisions such as *Instructional*, *Administrative*, and *K-12* will meet to discuss areas of common interest, while at Tuesday's breakfast, discipline-specific divisions (*Civil*, *Mechanical*, *Electrical*, etc.) will meet.

Next year, the 2014 ASEE-SE Conference will be hosted by Mercer University in Macon, Georgia. Mercer's site host committee is already working hard to prepare for our visit. I look forward to seeing you again next year.

It has been a privilege and honor to serve as your 2012-2013 President. I thank each officer who has volunteered his or her time to support the Southeastern Section. The dedicated members in this section make service a pleasure, and I look forward to supporting the new President and officers during the upcoming year.

Tyson Hall
President, ASEE-SE

Acknowledgements

First, let me add my welcome to those on the previous pages. I hope you find the Conference activities to rewarding and enriching, and I hope that you have an opportunity to enjoy the Tennessee Tech campus, Cookeville, and its area attractions. We are so glad you are here.

Before this year, I really didn't understand the complexities associated with hosting a conference, but now I have a greater appreciation for all the hard work and devotion required of the host institution. I offer a belated "thank you" to the hosts of the past.

While my title may be "Site Coordinator," most of the actual work was done by others, the people who really made this conference possible. I would therefore like to express thanks to:

- Dean Joseph Rencis and former Interim Dean David Huddleston for demonstrating a commitment to excellence in engineering education by offering our campus as host institution and supporting this endeavor with time and resources.
- The College of Engineering, its Departments, Chairpersons, and Staff for supporting our conference goals by providing volunteers for work and support for faculty attendance.
- The Millard Oakley STEM Center and its Staff for supporting our conference by providing staff, coordinating registration, and providing access to their facilities.
- Our Conference Planning Committee, including Sally Pardue (STEM, Assistant Chair), Jessica Matson (CEE, Assistant Chair), Ken Hunter (BE), Pedro Arce (CHE), Robby Sanders (CHE), Martha Kosa (CSC), Omar Elkeelany (ECE), Stephen Canfield (ME), and Ismail Fidan (MIT), for their efforts in planning and directing the conference.
- The ASEE Southeastern Section leadership for their efforts in developing and maintaining an excellent annual conference, including all the resources and support needed by a host institution.
- All the participants in this year's conference – attendees, student poster competitors, authors/presenters, moderators, and reviewers. Without you, there would be no conference.

I would also like to extend a special word of thanks to a few individuals who helped keep me from being overwhelmed by this process: Melanie Hutcherson (who helped keep me from forgetting), Donna Smith (who helped manage the money), Ruby Anaya (who edited this book), Marbin Pazos-Revilla (who organized our tech support) and Beth Smith (who managed all the last-minute details).

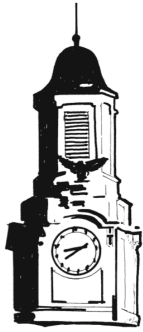
It has been an incredible year of preparation here at Tennessee Tech, and I hope that the conference experience exceeds your expectations. If there's anything I can do to make your experience better, please let me know.



Steven M. Click
Site Coordinator

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Tennessee Tech University Campus

Directions:

Coming directly to campus: From I-40, take **Exit 286** and turn north onto Willow Avenue.

From I-40W (from Knoxville), this will be a right turn.

From I-40E (from Nashville), this will be a left turn.

Go 3 miles on Willow Avenue and turn right onto University Drive. At the first four-way stop, Prescott Hall will be the building on your right at the intersection of University and Stadium Drives. Registration is in the lobby of Prescott Hall, located at 1020 Stadium Drive. To get to the Prescott Hall parking lot, please turn right on Stadium Drive, pass Prescott Hall, and the lot will be on your left.

From the hotels:

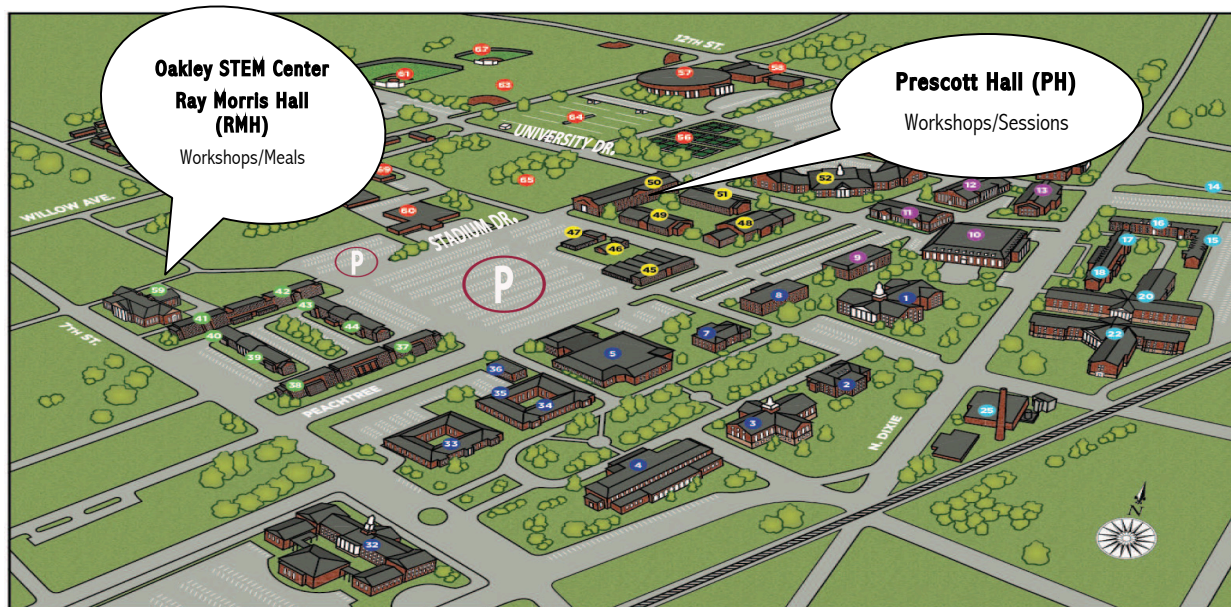
If you are staying at the Baymont Inn or Holiday Inn Express, turn left onto Jefferson Avenue headed North. Turn left onto Interstate Drive, then right onto Willow Avenue at the second traffic light. Proceed North on Willow Avenue for 2.5m and turn onto University Drive.

If you are staying at the Clarion Inn or Best Western Thunderbird, turn left out of your hotel, and take an almost immediate right onto Interstate Drive. Take a right onto Willow Avenue at the second traffic light and proceed north on Willow Avenue for approximately 2.5 miles. Turn right onto University Drive.

Links to interactive and printable maps of TTU's campus can be found at <http://www.tntech.edu/map>



Parking & Transportation



Parking:

Participant parking is marked by a (P) on the Tennessee Tech University campus map above. There will also be signage to help you find your way once you are on campus. The Participant Parking Lot is on the side of Prescott Hall on Stadium Drive. If you have any problems with parking, please ask for the ASEE SE Site Coordinator or an assistant. You may park anywhere on campus, except handicap or emergency vehicle parking unless you are authorized to use these spaces. There is no plan for shuttles between campus and hotels.

Transportation:

Transportation for Sunday Evening: *March 10th – 6:00 - 8:30 pm*

Welcome Reception at Appalachian Center for Craft

***Bus transportation will be provided to and from the Welcome Reception. Please meet in the Prescott Hall Parking Lot at 5:00 pm, if you plan to use this option. It will leave the Appalachian Center for Craft at approximately 8:30 pm. Transportation time is 40 minutes each direction.**

Transportation for Monday Evening: *March 11th – 6:00 -9:00 pm*

Awards Banquet at DelMonaco Winery & Vineyards

***Bus transportation will be provided to and from the Awards Banquet. It will depart from Prescott Hall at 5:30 PM. Please meet in the Prescott Hall Parking Lot at 5:15 pm. It will leave DelMonaco Winery & Vineyards at approximately 9 pm.**

Prescott Hall (PH)



History:

Prescott Hall was completed in 1969 during Dr. Everett Derryberry's tenure as Tennessee Tech University President. Designed by Steinbaugh, Harwood & Rodgers Architects and constructed by Sorrell Brothers, Prescott Hall was intended for occupancy by the Chemical and Civil Engineering Departments, which still reside therein. The building was named after Dr. Wallace S. Prescott.

Dr. Wallace S. Prescott, a 1946 alumnus, served Tennessee Tech for nearly 40 years as an educator, scholarly leader, public servant and effective administrator. He was the University's chief academic officer for 21 years. He led in curricula development, faculty recruitment and major program accreditation. Two years after retiring, he returned to serve as Interim President. His wisdom, leadership skills, talents and energy were frequently sought outside the University. His many contributions resulted in his receiving the Distinguished Alumnus Award of Tennessee Tech in 1977, the Outstanding Civilian Service Award of the United States Army in 1983, and the Founders' Award of West Georgia in 1983. He was selected as a Tennessee Tech Engineer of Distinction in 1984.

- **Registration in the Lobby**
- **Workshops and Sessions**
- **Bus transportation from this location to Reception and Banquet**
- **Participants Parking Lot is next to Prescott Hall (Stadium Drive)**

Millard Oakley STEM Center

(Ray Morris Hall)



*Enhancing the Teaching and Learning
of Science, Technology, Engineering and Mathematics*
tntech.edu/stem

ABOUT THE MILLARD OAKLEY STEM CENTER

Tennessee Tech’s Millard Oakley STEM Center for the Teaching and Learning of Science, Technology, Engineering and Mathematics supports a campus-wide initiative to develop new educational strategies in STEM-related fields. Located in Ray Morris Hall, the center actively promotes and provides quality STEM education outreach programs in the Upper Cumberland region and throughout the state of Tennessee.

TEACHERS & SCHOOLS

Professional Development for Teachers

The Millard Oakley STEM Center provides PreK-12th grade teachers throughout the Upper Cumberland region and the state access to hands-on workshops, cutting-edge resources, new technologies, and strategies for engaging their students in the STEM-based subjects of science, technology, engineering and mathematics.

STEM Center User Group Training & EXPEDITION Field Trips

STEM Center User Group Professional Development Training prepares teachers to use the learning laboratories, equipment and resources available at the Millard Oakley STEM Center. Their classes then attend a related EXPEDITION Field Trip. Students will experience two standards-aligned activities, the Virtual Theater, and more!

NASA Educator Resource Center

The NASA Educator Resource Center (ERC) in Tennessee Tech University’s Millard Oakley STEM Center focuses on providing teachers information about and access to the National Aeronautics and Space Administration’s vast STEM-education resources.

KIDS & FAMILIES

STEM FAB Fridays: Family-Centered Activities

Kids and parent/guardians can dive into interactive experiences in technology, use science and engineering equipment, enjoy interactive activities, explore the universe, and more!

STEM Safari Saturdays for Young Learners

Enjoy family-friendly, hands-on programs for Pre-K through 3rd graders. Experience a variety of engaging learning activities in the sciences and mathematics.

EXPLORATION Workshops

Build a robot, launch a rocket, dissect a shark, and more! Get them out of the house and into the laboratory to participate in hands-on, minds-on learning experiences. EXPLORATIONS available in the summer; grade levels and workshop topics vary annually.

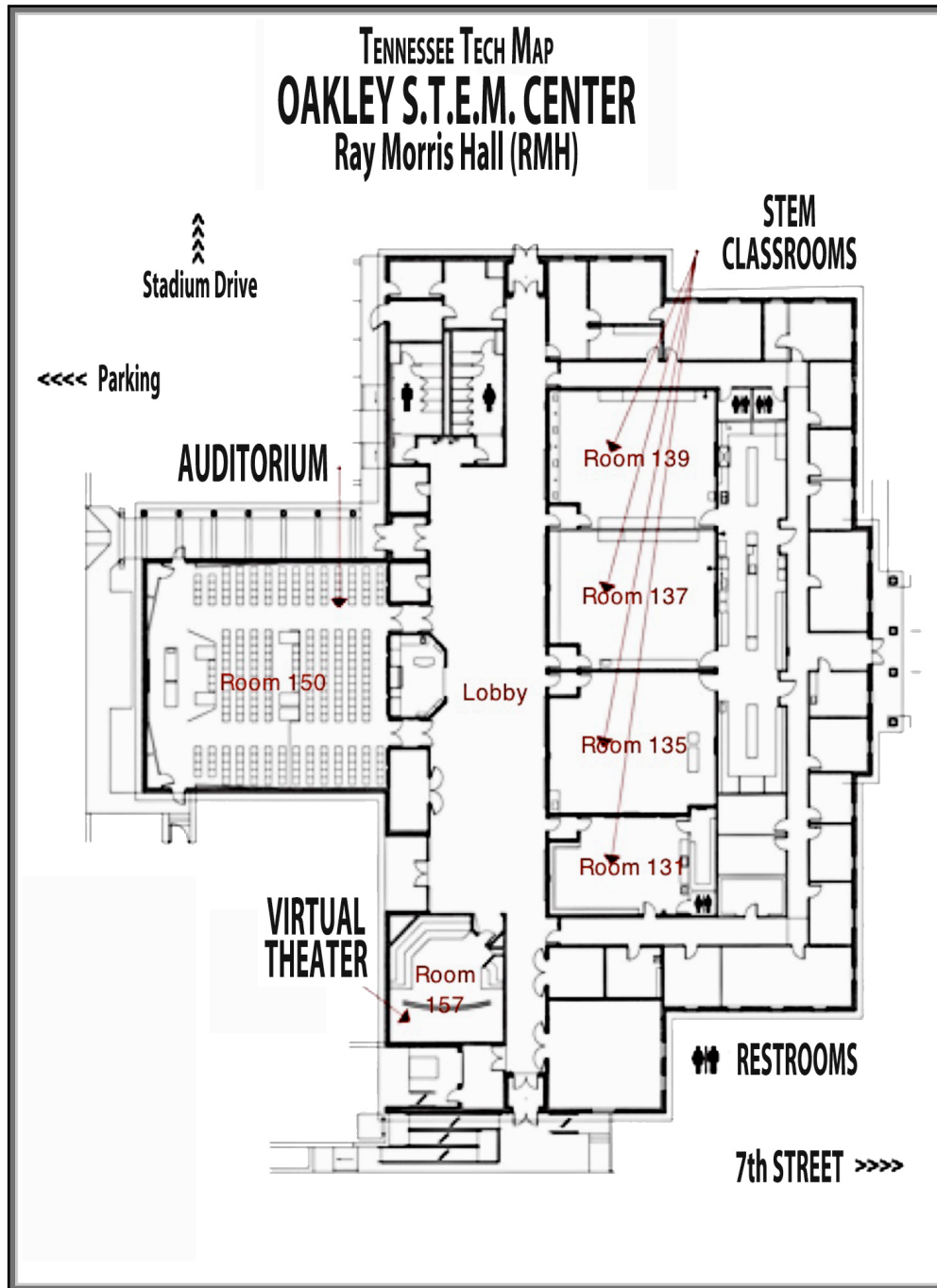
Virtual Theater Experience

Fly beyond the Earth in the state-of-the-art Virtual Theater and be wowed by the planetarium-like experiences. Perfect excursions for school groups, families and individuals wanting to know more about our world and changing universe.

Millard Oakley STEM Center Map

Ray Morris Hall

Workshops & Meals



Floor Plan

Appalachian Center for Craft

About the Craft Center

The Appalachian Center for Craft, located near Smithville, Tennessee, is a satellite campus of Tennessee Tech University (TTU). The Craft Center offers Bachelor of Fine Arts degree concentrations in clay, fibers, glass, metals and wood, as well as non-degree Craft Certificate programs in the five craft media.

The Craft Center is an 87,000 sq. ft. facility located on more than 500 gorgeous, wooded acres overlooking Center Hill Lake in scenic Middle Tennessee. The facility includes spacious studios, a retail gallery, exhibition galleries, administrative offices, a library, a cafe, student housing, and meeting/audio visual rooms.

Everyone can enjoy this beautiful and inspiring facility throughout the year.

- Hands-on craft workshop sessions are available to the public in the summer.
- Enjoy shopping in the Craft Center's contemporary fine craft gallery. Open daily, 9am-5pm (CT)
- Experience world-class exhibitions of functional and sculptural fine craft throughout the year.

Admission is free. Open daily, 9am-5pm (CT).

- Annual Special Events include the Celebration of Craft each spring and the Holiday Festival in the fall.



Sunday Welcome Reception

Sunday, March 10, 6:00-8:30 PM

Appalachian Center for Craft

1560 Craft Center Drive
Smithville, TN 37166
www.tntech.edu/craftcenter

Sponsored by



Join us as we open the ASEE-SE 2013 Conference with a welcome reception at the Appalachian Center for Craft. You won't want to miss the opening reception! The evening will include fabulous food by award winning chef Chad Combs, a chance to peruse fine art by 100+ local and regional artists, guided tours of the studios by Craft Center students and artists, and live craft demonstrations.

Transportation:

*Transportation will be provided to and from the Welcome Reception. Please be in the Prescott Hall parking lot at 5:00 pm if you plan to use this option. The buses will depart from Prescott Hall at 5:15 pm. It will leave the Appalachian Center for Craft at approximately 8:30 pm. Transportation time is approximately 40 minutes each direction.

Directions:

The Craft Center is approximately 60 miles east of Nashville, 120 miles west of Knoxville, and only 25 miles west of TTU's main campus in Cookeville.

From Interstate 40: From I-40 take Exit 273 (Smithville/McMinnville), go south on Hwy 56 for approximately 6 miles. After crossing Hurricane Bridge over Center Hill Lake/Caney Fork River take an immediate left at the Craft Center sign. This drive leads to the Craft Center parking lot and facility

Keynote Speaker

Stacy Klein-Gardener, Ph.D.
Director, Center for STEM Education for Girls



Dr. Stacy Klein-Gardner took on the position of Director of the Center for STEM Education in April 2011 just as the Center began. An engineer by training and in her ways of thinking, she received a BSE in biomedical and electrical engineering from Duke University in 1991. She then earned her M.S. from Drexel University in 1993 and her Ph.D. in biomedical engineering from Vanderbilt University in 1996.

Dr. Klein-Gardner's career focuses on K-12 science, technology, engineering and mathematics (STEM) education, particularly as it relates to increasing interest and participation by females. Dr. Klein-Gardner serves as the Director of the Center for STEM Education for Girls at the Harpeth Hall School in Nashville, TN. Here she leads professional development opportunities in science, technology, engineering, and mathematics (STEM) for K-12 teachers and works to identify and disseminate best practices from successful K12, university and corporate STEM programs for females. This Center also leads a program for rising 9th and 10th grade girls

that integrates community service and engineering design in a global context.

She continues to serve as an Adjoint Professor of the Practice of Biomedical Engineering, Teaching and Learning, and Radiological Sciences at Vanderbilt University where she partners with other universities in NSF-funded research to develop the Engineering Design Process Portfolio Scoring Rubric. She ran an NSF-funded programs such as Research Experiences for Teachers (RET) for nine years. She has served as the Associate Dean for Outreach in the Vanderbilt School of Engineering from 2007-2010. She established the Metropolitan Nashville Public Schools (MNPS) engineering pathway from K-12 with Race to the Top funding in 2010-2011 and is working with the state of Tennessee on potential adoption plans for the new Next Generation Science Standards.

Dr. Klein-Gardner is also active alumna of the Duke Talent Identification Program (TIP) and Duke University's Pratt School of Engineering, where she serves on the Board of Visitors. In 2012 she received the Distinguished Service Award from Pratt. Dr. Klein-Gardner is also active in the American Society for Engineering Education, serving as the chair-elect of the 800+ member K12 division.

Monday Night Awards Banquet

Monday, March 11, 6:00-9:00 PM



DelMonaco Winery & Vineyards

600 Lance Drive
Baxter TN 38544

Hours:

Mon-Thurs 10-5pm • Friday-Saturday 10-7pm • Sunday 12-5pm

Free Tasting & Tours

What DelMonaco Winery & Vineyards Offers

- Free Tastings of our Award Winning Wines
- Free Tours of our Winery & Vineyards
- Rooms to host your special Events
- Wine Clubs with 3 levels of Membership
- Fun Events Open to the Public
- Gift Shop for the Connoisseur or Novice

Transportation:

*Transportation will be provided to and from the Awards Banquet. Please be in the Prescott Hall parking lot at 5:15 pm if you plan to use this option. The buses will depart from Prescott Hall at 5:30 pm.

Directions

Please head west on W. 7th Street toward N. Walnut Avenue, and turn left onto N. Willow Avenue. Turn right onto W. Broad Street. Continue onto TN-24 W/US-70N W/Nashville Highway. Turn left onto Lance Drive. Destination will be on the left.

Conference Meals and Receptions

Welcome Reception

Sunday, March 10, 6:00 p.m. – 8:30 p.m.

Tennessee Tech's Appalachian Center for Craft

1560 Craft Center Drive

Smithville, TN 37166

Enjoy perusing fine art by 100+ local and regional artists and explore the facility on a guided tours led by Craft Center students and artists, and watch live craft demonstrations in the studios.

Redbud Café

On site at the Appalachian Center for Craft

Dine on the delectable hors d'oeuvres by award-winning chef Chad Combs. Food and beverages will be available in both the Café and *the gallery*.

NOTE: Transportation will be provided to and from the Welcome Reception. Please be in front of Prescott Hall promptly at 5:00 p.m., if you plan to use this option.

Function-Related Division Meetings Breakfast

Monday, March 11, 7:30 a.m. – 8:30 a.m.

Oakley STEM Center Lobby

A full breakfast will be served beginning at 7:30 a.m. Please sit in the appropriate table cluster and talk with colleagues in the following ASEE-SE divisions:

- Administrative
- Instructional
- K-12
- Professional Skills
- Research

Each division will hold a brief meeting after breakfast, followed by a meeting of the Programs Unit.

Thomas Evans Award Lunch

Monday, March 11, 12:30 p.m. – 2:00 p.m.

Oakley STEM Center Lobby & Auditorium

After finishing lunch in the lobby, attendees will go into the auditorium for the presentation and award for the Thomas Evans Outstanding Instructional Paper.

Awards Banquet**Monday, March 11, 6:00 p.m. – 9:00 p.m.***DelMonaco Winery & Vineyards**600 Lance Drive**Baxter, TN 38544*

Sample the specialty wines, enjoy the music, and feast on a fantastic dinner. The awards ceremony celebrating those who have made outstanding contributions to the field of engineering education will be immediately following.

NOTE: Transportation will be provided to and from the Awards Banquet. Please be in front of Prescott Hall promptly at 5:15 p.m., if you plan to use this option.

Discipline-Related Division & Unit Meetings Breakfast**Tuesday, March 12, 7:30 a.m. – 8:30 a.m.***Oakley STEM Center Lobby*

A full breakfast will be served beginning at 7:30 a.m. Please sit at one of the table clusters and meet colleagues in the following ASEE-SE divisions:

Awards and Recognition Unit Divisions

- Bioengineering
- Civil Engineering
- Engineering Graphics
- Engineering Technology
- Industrial Engineering

Publications and Promotion Unit Divisions

- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Software Engineering

Each division will hold a brief meeting after breakfast, followed by meetings of the respective units.

Section Business Meeting Lunch**Tuesday, March 12, 12:00 p.m. – 1:15 p.m.***Oakley STEM Center Lobby*

Please plan to attend the ASEE-SE Business Meeting to visit with your present Section Officers and vote for those officers for the upcoming year. We will close with a recap of the conference activities and officially announce the site of the 2014 conference.

WiFi Accessibility on Campus

Tennessee Tech University Guest Access

Information:

The conference wifi account is available to you as guests from March 10-12, 2013. It is available from the hours of 7 am – Midnight each day of the conference.

Procedure:

- Choose the wireless network called ‘TTU–WLAN–Secure’
- When prompted, enter the password ‘gottueagles’
- Open a browser window
- You should be redirected to the TTU Acceptable Use Page
- Review the terms and choose ‘ACCEPT’
- On the Network Access Control Page, choose ‘GUESTS WHO HAVE A TEMPORARY ACCOUNT’, under ‘GUESTS’
- In the EMAIL box, Enter “ASEE“
- For the password, enter “aseese”
- On the next page, enter your name and email address
- After a short progress bar, you will be notified that the connection is successful and be prompted to close and reopen your browser.

You should be now connected to the TTU Wireless Network if you did all the procedure steps above.

You may receive an email regarding the lack of anti-virus software on your device. Please ignore that email.

Username: ASEE

Password: aseese

If you are having difficulty in accessing the WiFi on campus, please alert any ASEE SE officer.

Conference Workshops At-A-Glance

All workshops on Sunday will be held in Prescott Hall and Oakley STEM Center on the TTU campus.

#	Title	Lead Author	Time	Loc	Fee
1	Screen Engineering	Chris ORiordan-Adjah	10-12	SC 137	Free
	Screen Engineering – Bridging the gap between in class concepts and real life application in an entertaining way to improve theory effectiveness.				
2	Introduction to Arduino	Timothy Wilson	1-4	PH 215	Free
	This workshop presents the Arduino computing platform as a tool for instructional use across a number of engineering domains * Limit 10				
3	A Framework to Predict Dissemination Success of STEM Educational Innovations	Chetan Sankar	10:30 – 12	SC 139	Free
	Participants will be shown a framework leading to the successful implementation of engineering educational innovations and will be involved in discussion on this topic.				
4	Screen Engineering Showcase	Chris ORiordan-Adjah	1 - 5	SC Lobby	Free
	Posters will be on display that Showcase Screen Engineering				
5	Engineering EFFECTs: Environments for Fostering Effective Critical Thinking.	Charles E. Pierce	1-5	PH 304	Free
	Participants in the EFFECTs Workshop will explore teaching and learning methods that engage engineering students in critical thinking about real engineering problems, and the workshop will provide examples and tools that are used in the EFFECTs pedagogical framework to stimulate, document, and assess critical thinking.				
6	K-12 Engineering Outreach Workshop	Sally Pardue	1:30 - 4:30	SC 131,135 137,139	Free
	K-12 Engineering Outreach Workshop – The workshop is a 3-hour showcase of ten to twelve engineering activities and programs aligned with education standards and designed for use with K – 12 teachers and students in formal and informal learning environments.				
7	Creating Hands-on Programming Experiences for Engineering Students	Sheikh Ghafoor	1:00-5:00	PH 222	Free
	The workshop will present a method and tools to introduce programming to engineering students using microcontrollers. The method will allow freshman engineering students to learn programming while engaging with engineering hardware. The method can also be implemented into other engineering courses.				
8	Developing the NAE 2020 Engineer	Pedro Arce	1:00 – 5:30	PH 205	Free
	Workshop will train educators in approaches useful to develop the new NAE 2020 Model. One helpful prototype is the recent Renaissance Engineering Model adopted at TTU.				

SC = Millard Oakley STEM Center (Ray Morris Hall) and PH= Prescott Hall

Technical Session Information

Session and Presentation Timing

Sessions are scheduled for 4 presentations times. Some technical sessions have sections with a non-uniform number of papers. This is a result of late cancellations and attempting to theme sessions. In order to facilitate movement between sections in a technical section, each paper in a given technical section will be allotted the same amount of time. The presentation start times are listed in the grid below. This includes the introduction time and a 3 minute question/answer period. If there is a no-show author in a session, a break will be called. **Papers should not be moved up or rearranged in sessions.**

	Session T1	Session T2	Session T3	Session T4	Session T5
Presentation #1	10:20	2:15	3:50	8:45	10:25
Presentation #2	10:40	2:35	4:10	9:05	10:45
Presentation #3	11:00	2:55	4:30	9:25	11:05
Presentation #4	11:20	3:15	4:50	9:45	

Instructions for Technical Session Moderator Chairs

Be prepared to moderate the session.

Arrive 10 minutes early to the room where the session you are moderating is being held. Meet the presenters as they enter the room and go over the pronunciation of their name. Make sure all presentations are loaded and ready to go *before* the session starts. Bring a watch.

Provide presentation guidelines at the beginning of the session.

Introduce yourself at the beginning of the session. Remind presenters of the time limitations and that you will give a hand signal to warn that there are 5 minutes and then 2 minutes remaining.

Introduce each presenter or presenters prior to their presentation.

At the end of each presentation, the next speaker should come up and ready their slide show. Introduce the presenter when ready.

Maintain the presentation schedule.

One primary responsibility of the moderator is to ensure that the presenters begin and finish their presentations on time according to the technical program. Maintaining the presentation schedule within the session allocated time helps to have fair treatment for all presenters. In the event that a presenter, who is not last in the hour, is not present or has canceled, please wait to begin the next paper at the scheduled time, so that all who planned to attend the remaining paper(s) can. The moderator has the authority to stop a presentation that is about to run overtime in a respectful manner. It is also the job of the presenter to prepare to fit the presentation in the allotted time. Try your level best to not let a presentation and Q&A overrun the allotted time.

Conference Technical Sessions At-A-Glance

Monday, March 11, 2013

Technical Session 1 10:20 am – 11:40 am

10:20am – 11:40am	T1-A Prescott 208	T1-B Prescott 222	T1-C Prescott 225	T1-D Prescott 304	T1-E Prescott 325
Technical Session 1	Instructional Division I	K-12 Division I	Administrative Division I	Civil Eng. Division I	Mechanical Engineering Division I
<i>Moderator:</i>	<i>Shih-Liang (Sid) Wang</i>	<i>Atin K. Sinha</i>	<i>Donna Reese</i>	<i>Ken Brannan</i>	<i>Robert Choate</i>

Monday, March 11, 2013

Technical Session 2 2:15 pm – 3:35 pm

2:15 pm– 3:35 pm	T2-A Prescott 208	T2-B Prescott 222	T2-C Prescott 225	T2-D Prescott 304	T2-E Prescott 325
Technical Session 2	Instructional Division II	K-12 Division II	Administrative Division II	Engineering Technology Division	Mechanical Engineering Division II
<i>Moderator</i>	<i>Monika Bubacz</i>	<i>Sally Pardue</i>	<i>Atin K. Sinha</i>	<i>Jerry Newman</i>	<i>Don Van</i>

Monday, March 11, 2013

Technical Session 3 3:50 pm – 5:10 pm

3:50 pm - 5:10pm	T3-A Prescott 208	T3-B Prescott 222	T3-C Prescott 225	T3-D Prescott 304	T3-E Prescott 325
Technical Session 3	Cancelled	K-12 Division III	Computer/ Software Division	Research Division I	Professional Skills Division I
<i>Moderator:</i>		<i>Sally Pardue</i>	<i>Randy Smith</i>	<i>Gillian Nicholls</i>	<i>Adeel Khalid</i>

Tuesday, March 12, 2013

Technical Session 4 8:45 am – 10:05 am

8:45 am – 10:05 am	T4-A Prescott 208	T4-B Prescott 222	T4-C Prescott 225	T4-D Prescott 325
Technical Session 4	Engineering Graphics Division	K-12 Division IV	Mechanical Engineering Division III	Civil Engineering Division II
<i>Moderator:</i>	<i>Priya Goeser</i>	<i>Claire McCullough</i>	<i>Monika Bubacz</i>	<i>Michael Woo</i>

Tuesday, March 12, 2013

Technical Session 5 10:25 am – 11:45 am

10:25 am – 11:45am	T5-A Prescott 208	T5-B Prescott 222	T5-C Prescott 225
Technical Session 5	Instructional Division III	Professional Skills Division II	Research Division II
<i>Moderator:</i>	<i>Richard Mines</i>	<i>Richard Kunz</i>	<i>Gillian Nicholls</i>

ASEE SE Section Officers 2012-13

SECTION OFFICERS 2012-13

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Vice Chair:	Beth Todd	University of Alabama
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ASEE SE Conference Participants 2013

First Name	Last Name	Institution
John	Abbitt	University of Florida
Hassan	Alfadhli	University of North Texas
Delaina	Amos	University of Louisville
Adam	Anderson	Tennessee Tech University
Thomas	Anderson	University of Tennessee at Chattanooga
Athanasios	Athanson	The Citadel
Garcia Burgos	Axel	Embry Riddle University
Martin	Ayers	University of South Carolina-Charlotte
Amy	Barton	Mississippi State University
Alex	Beauboeuf	North Carolina A&T State University
Curtis	Beck	Clemson University
Barbara	Bernal	Southern Polytechnic State University
David	Bourrie	Auburn University
Matthew	Boynton	Virginia Tech
Michael	Bradshaw	WKU-Dept. of Engineering
Andrew	Brammer	University of Alabama
Kenneth	Brannan	The Citadel
Colin	Britcher	Old Dominion University
John	Brocato	Mississippi State University
Aidan	Browne	UNC Charlotte
Monika	Bubacz	Mercer University
Lisa	Bullard	North Carolina State University
Daniel	Bunei	University of Alabama
Chris	Byrne	Western Kentucky University
Juan	Caicedo	University of South Carolina
David	Calamas	University of Alabama
Cheryl	Carrico	Virginia Tech
Bruce	Carroll	University of Florida
Robert	Choate	WKU- Dept. of Engineering
Anthony	Choi	Mercer University
Marcos	Chu	Capella University
Steven	Click	Tennessee Tech University
James	Dally	University of Maryland

Maurice	Daniels	North Carolina A&T State University
Tania	Datta	Tennessee Tech University
Saama	Davies	University of Tennessee at Chattanooga
Maxwell	DeWees	Embry-Riddle Aeronautical University
Michael	Dickey	North Carolina State
David	Domermuth	Appalachian State University
Elliot	Douglas	University of Florida
Tabatha	Dye	University of Alabama
Omar	Elkeelany	Tennessee Tech University
Dr. Ahmed	Elsawy	Tennessee Tech University
Matthew	Eubanks	Western Kentucky University- Dept. of Engineering
Matthew	Faircloth	University of Tennessee at Chattanooga
Dennis	Fallon	The Citadel
Tom	Fallon	Southern Polytechnic State University
Ismail	Fidan	Tennessee Tech University
Brett	Fleury	University of North Carolina at Charlotte
George	Ford	Western Carolina University
Wesley	Ford	University of Tennessee at Chattanooga
James	Gibert	Clemson University
Patrick	Godfrey	University of Tennessee at Chattanooga
Priya	Goeser	Armstrong Atlantic State University
Ryan	Gott	Western Kentucky University
Marshall	Guillot	University of Tennessee at Chattanooga
Tyson	Hall	Southern Adventist University
David	Harris	University of Tennessee at Chattanooga
Justin	Hayes	Western Kentucky University- Dept. of Engineering
Craig	Henderson	Tennessee Tech University
Priscilla	Hill	Mississippi State University
Duong	Ho	Southern Polytechnic State University
Kenneth	Hunter	Tennessee Tech University
Joel	Ingram	Union University
Brent	Jenkins	Southern Polytechnic State University
Hodge	Jenkins	Mercer University School of Engineering
Connor	Johnson	University of Tennessee at Chattanooga
David	Johnstone	Virginia Military Institute
Gabrielle	Jordan	North Carolina A&T State University
Alfred	Kalyanapu	Tennessee Tech University

Adeel	Khalid	Southern Polytechnic State University
Stacy	Klein-Gardner	Center for STEM Education for Girls
Daniel	Kohn	University of Memphis
Tanya	Kunberger	Florida Gulf Coast University
Richard	Kunz	Mercer University
Laura	LeMire	Community College of Baltimore County
Victor	Lollar	University of Tennessee
Pete	Ludovice	Georgia Tech
Laura	Luna	Tennessee Tech University
Stephanie	Luster-Teasley	North Carolina A&T State University
Twanelle	Majors	Warren County High School
Jessica	Matson	Tennessee Tech University
Philip	McCreanor	Mercer University
Michael	McCreary	University of Louisville
Claire	McCullough	University of Tennessee at Chattanooga
Robert	McCullough	University of Alabama
Richard	Mines	Mercer University
Laura	Moody	Mercer University
Perry Willard	Munger	Southern Adventist University
Thomas	Murphy	Armstrong Atlantic State University
Otsebele	Nare	Hampton University
Charles	Newhouse	Virginia Military Institute
Jerry	Newman	University of Memphis
Gillian	Nicholls	University of Alabama at Huntsville
Adebayo	Ogundipe	James Madison University
Joshua	Olson	University of West Florida
Andrea	Otero	University of Central Florida
Danny	Overstreet	Knovel
Sally	Pardue	Tennessee Tech University
Charles	Pierce	University of South Carolina
Andrew	Potter	University of West Florida
Ulyana	Pugina	University of Tennessee at Chattanooga
Jeffrey	Ray	Southern Polytechnic State University
Donna	Reese	Mississippi State University
Joseph	Rencis	Tennessee Tech University
Mike	Renfro	Tennessee Tech University
Matthew	Robinson	University of Tennessee at Chattanooga

Katherine	Safford	Mercer University
Chetan	Sankar	Auburn University
Scott	Schultz	Mercer University
Randal	Schwindt	Union University
Joseph	Scobey	University of Tennessee at Martin
Paige	Sforzo	Mercer University
Matthew	Sheen	Clemson University
Atin	Sinha	Albany State University
Randy	Smith	University of Alabama
Laura	Sosa	Mercer University
Richard	Stansbury	Embry-Riddle Aeronautical University
Tulio	Sulbaran	The University of Southern Mississippi
Matt	Swenty	Virginia Military Institute
Amber	Thompson	Isothermal Community College
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Jesse	West	University of Tennessee at Chattanooga
Cecelia	Wigal	University of Tennessee at Chattanooga
Timothy	Wilson	Embry-Riddle Aeronautical University
Michael	Winn	University of Tennessee at Chattanooga
Virgil	Wong	Elsevier
Yung	Wong	Embry-Riddle Aeronautical University
Michael	Woo	The Citadel
Justin	Wood	Tennessee Tech University
Petros	Xanthopoulos	University of Central Florida
Tianyu	Yang	Embry-Riddle Aeronautical University
Paul	Yanik	Western Carolina University
Sun	Yi	North Carolina A&T State University
Zhaoxian	Zhou	University of Southern Mississippi



Inspiring Innovation. Advancing Research. Enhancing Education.

Engineering faculty face multiple stresses – teaching and classroom management, the push for tenure, pressure to get funding and do quality research, and finding time to write and publish. ASEE is the **only professional society for engineering educators** across all disciplines, and as such, we provide a range of resources to help engineering faculty succeed and manage these competing priorities.

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Upon joining, members can enroll in up to six of ASEE's 51 professional interest divisions, addressing all engineering disciplines, as well educational topics, social issues and industry interaction. Division members can meet and collaborate as often or as little as they wish, and form relationships across divisions.

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ASEE's premiere event is a four-day annual conference, attended by nearly 4,000 people. At the conference members interact with peers, learn about items crucial for their professional development—including grant writing and publishing—and learn from developments in other institutions. In addition, annual section meetings allow members to meet with others in their geographic regions.

Faculty want professional assistance → ASEE provides research-based instructional advice

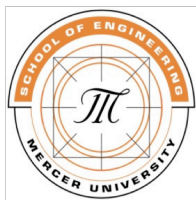
In conjunction with the annual conference, ASEE convenes the National Effective Teaching Institute meeting, providing hands-on practice in the elements of effective teaching--course planning, lecturing, active learning, assessment of learning. Beyond NETI, ASEE has instructional workshops around the country aimed at helping faculty to improve their teaching, research and administrative skills. In addition, membership comes with free online access to the *Journal of Engineering Education* (and a discounted subscription for the hardcopy version), a peer reviewed journal providing the latest developments in successful, research-supported instruction methods.

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Through its Engineering Research Council, ASEE supports faculty with their professional research efforts. The ERC provides a forum for discussion of problems and exchange of information pertaining to the research activities; represents and speaks on behalf of research and its administration both externally and within ASEE; improves the effectiveness of research operations at ERC member institutions; and maintains relationships with other organizations concerned with research and its administration. With newsletters and publications, ASEE keeps members informed of news and events that impact their fields of expertise.

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ASEE SOUTHEASTERN SECTION CONFERENCE

MARCH 30-April 1, 2014

Mercer UNIVERSITY
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PREPARING ENGINEERS FOR THE GRAND CHALLENGES OF THE FUTURE

Engineers educated now will be the catalyst of change and will propel society forward through new technologies for decades to come. Thus, it is the responsibility of engineering educators to prepare these engineers to meet the grand challenges facing them currently and in the future. Problems and opportunities will be mastered by those best prepared to learn new skills and adapt. Curriculums, courses, and other learning experiences that provide the engineering skills and mindset necessary to meet these future challenges are the focus of this conference.

CALL FOR PAPERS AND PRESENTATION ABSTRACTS

Authors are invited to submit full-length manuscripts for presentation at the conference and inclusion in its proceedings. Papers addressing the conference theme will have first priority and may include topics related to the following:

- Innovative Curricula or Courses
- First Year Engineering Programs
- Organizational Structures to Promote Interdisciplinary Engineering
- Engineering Common Cores
- Teaching/Learning Practices: Past, Present, and Future
- Distance Learning in Engineering
- Ethics and Professional Practice
- Technologies for Efficient Learning
- Engineering K-12 Outreach Programs
- Engineering Learning Communities
- ABET Accreditation Projects
- Engineering Recruitment and Retention
- Partnerships
- Capstone Design Courses or Projects
- Engineering Professional Development

Authors may also address other topics of interest to the engineering education community. Guidelines for manuscript preparation are available via the Author Instructions at www.asee-se.org at the Conference page.

Papers will be accepted based on a peer review of manuscripts. Authors are expected to present their papers at the conference to facilitate the transfer of knowledge through discussion and debate. All accepted papers presented by a timely-registered author will be included in the conference proceedings. A limited number of abstracts may be accepted for presentation. These abstracts will be published in the book of abstracts but will neither be peer-reviewed nor included in the conference proceedings.

An author/co-author can be associated with as many papers/presentations as is appropriate, but a registrant can serve as the presenter of record on a maximum of three presentations.

A poster session in which undergraduates discuss their experiences in engineering education (design projects, research, etc.) is anticipated. Information about this session will be available in the fall.

SCHEDULE FOR SUBMISSION OF PAPERS AND ABSTRACTS

Friday, October 4, 2013	Abstracts submitted by authors for consideration
Friday, October 11, 2013	Authors notified regarding acceptance
Tuesday, December 3, 2013	Manuscripts due from authors for review
Friday, January 10, 2014	Reviewed manuscripts returned to authors
Friday, January 31, 2014	Final manuscripts and extended abstracts due from authors
Friday, February 21, 2014	Deadline for presenters to register for conference

Submit a 250-300 word abstract in doc, docx, or pdf file format by October 4, 2013
Conference paper submission site will be announced at www.asee-se.org

CONTACTS

Jerry Newman, Technical Program Chair, (901) 318-5614, jdnewman@memphis.edu
 Hodge Jenkins, Conference Site Coordinator, (478) 301-2831, jenkins_he@mercer.edu

Cookeville Area Attractions

You never need to worry about a lack of things to do in Cookeville! Stroll through history by visiting the quaint downtown retail center, the Cookeville History and Depot museums, or by viewing the beautiful historic architecture of our public and commercial buildings and residences throughout the city. Prepare to be charmed by the matchless mountains, rich historical heritage, art and cultural events, unique downtown shops, cosmopolitan cuisine and outdoor opportunities at many state and local parks and lakes. Just a few of the must-see's include:

Cookeville Depot Museum

Built in 1909, the Cookeville Depot is now home to the Cookeville Depot Museum. Visitors can view railway artifacts, memorabilia, numerous photographs of the railroad in Putnam County over the years and scale trains that run such an authentic 1913 Baldwin steam locomotive and two cabooses. It's open year-round, and admission is free.

Cookeville History Museum

This museum features an enormous collection of items, artifacts, photographs, special exhibits and more, covering the history of Cookeville from prehistoric times through the present. The museum is at 40 E. Broad St. across from City Hall.

Historic Courthouse Square

The Historic Courthouse Square has made shopping fun and easy with pedestrian walkways, streetlights and crosswalks. Enjoy browsing through a variety of unique stores that have made the historic square their choice location. While on the square, you may appreciate a visit to the Arcade Building to observe the beautiful stained glass panels on the ceiling of what was the first enclosed shopping mall of its kind in Cookeville.

West Side Shopping and Dining

Cookeville's West Side boasts a wonderful collection of specialty shops, local restaurants, antique stores, eateries and more, all within walking distance of the Cookeville Depot Museum, Cookeville Drama Center, Convention & Visitors Bureau, Chamber of Commerce, Farmers Market, Cookeville Regional Medical Center and Tennessee Tech University. As you make your way through the West Side district, take time to appreciate the restored storefronts and internal structures of these historic buildings.

Highlands Visitor Center: www.mustseecookeville.com

470-A Neal Street, Cookeville, TN 38501

Hours: 9 a.m.-5 p.m. every day

Phone: (931) 525-1575

Features include:

- Interactive displays of local attractions
- Fine arts and craft items from local and emerging artists
- Historical exhibits
- A 32-inch flat-screen TV showing scenes of the Highlands
- A wall-sized map that highlights points of interest in the Upper Cumberland



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