

## Final Annual Report

### Tennessee Tech University

#### President

#### Research and Economic Development

#### Millard Oakley STEM Center



#### Definition of Millard Oakley STEM Center

**Department/Unit Contact:** Sally Pardue

#### Mission/Vision/Goal Statement

##### Vision

The Oakley STEM Center is a national leader in rural STEM Education.

##### Mission

The Oakley STEM Center enriches pre-kindergarten through college (P-16) student STEM learning with hands-on inquiry, enhances the STEM preparation of new and practicing prekindergarten through high school (P-12) teachers, models innovative instructional design and learning environments, conducts rigorous STEM education research, and collaborates with industry and organizations to strengthen STEM education initiatives across the region, state, and nation.

##### Administrative Support Services

Provide proposal development assistance with STEM education research grants, records keeping and purchasing assistance for principal investigators on funded STEM education research grants including professional development, interact with regional K-12 school systems and industry partners for STEM education outreach for students, teachers, and public.

##### Academic and Student Support Services

Schedule with Colleges and Departments for delivery of ~50 courses/semester in Ray Morris Hall (four classrooms and auditorium), provide instructional technology assistance for instructors while in the building, schedule use of building by student and campus organizations.



#### Oakley STEM Center Goal 1 Outreach

##### Define Goal

##### Oakley STEM Center Goal 1

Outreach: Provide STEM learning experiences for teachers (of grades preschool (P) through college (16)), students and families, and community members.

##### Intended Outcomes / Objectives

## **Goal 1 Objectives with Target Outcomes in italics**

1.1 Provide quality professional development (PD) and resources for P-12 STEM teachers that are based on local needs, aligned with state and national standards, and that model best practice in research-based STEM education. (*> 10 self-supported short duration PD events with teachers, > 12 participants per event, > 4 grant-supported long duration PD events with teachers > 20 participants per event*)

1.2 Provide quality STEM enrichment for P-12 students in collaboration with P-12 teachers. (*> 15 teacher-led events with students, > 100 participants per event*)

1.3 Provide programming to increase informal STEM education opportunities for the community. (*> 6 events with family/student/community members attendees, > 100 participants per event*)

1.4 Provide resources for P-16 STEM teachers consisting of: a) lending library of STEM instructional equipment and b) on-line webportal for electronic curation of workshop materials, lesson plans, units, modules, and videos and for formation and support of digital professional learning communities (D-PLC); and (c) STEMmobile. (*> 10,000 lendable items in lending library with 1% increase annually, > 10% of eligible members checking out resources, > 100 electronic artifacts posted annually, > 50 new members added to D-PLC annually, > 20 weeks use of STEMmobile*)

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## **Oakley STEM Center Goal 2 Academics**

### **Define Goal**

#### **Oakley STEM Center Goal 2**

Academic: Engage TTU campus stakeholders (colleges, departments, faculty, students) in the use of the Ray Morris Hall facility and Oakley STEM Center programs.

### **Intended Outcomes / Objectives**

#### **Goal 2 Objectives with Target Outcomes in italics**

2.1 Support faculty in their modeling of effective STEM instruction for future teachers. (*> 6 faculty per semester*)

2.2 Operate a STEM Student Ambassador program for TTU students to learn effective ways to support STEM education. (*> 10 students per semester*)

2.3 Facilitate TTU departments and faculty use of the Center for integrated STEM programs and courses for STEM majors on campus. (*> 3 events per semester, > 15 courses per semester*)

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## **Oakley STEM Center Goal 3 Research**

### **Define Goal**

#### **Oakley STEM Center Goal 3**

Research: Support TTU campus faculty in the development and dissemination of STEM education research activities.

## **Intended Outcomes / Objectives**

### **Goal 3 Objectives with Target Outcomes in italics**

3.1 Foster inter-collegial and multi-campus collaboration for STEM education research (*> 10 interactions in individual/group settings annually*)

3.2 Promote the learning studios and interview rooms as research spaces. (*> 4 events per semester*)

3.3 Disseminate STEM education research and development occurring in the university and in the region. (*> 6 events annually*)

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## **Oakley STEM Center Goal 4 Center Administration and Leadership**

### **Define Goal**

#### **Oakley STEM Center Goal 4**

Center Administration and Leadership (CA&L): Establish, maintain, and update Center operational procedures and relationships.

## **Intended Outcomes / Objectives**

### **Goal 4 Objectives with Target Outcomes in italics**

4.1 Meet with Advisory Council to receive input on Center goals and outcomes. (*Annually*)

4.2 Establish, maintain, and update procedures for each facet of Center programming. (*Bi-annually*)

4.3 Develop and maintain relationships with key individuals from external groups. (*> 6 events annually*)

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## **Assessment: Communications Log**

**Goal/ Outcome/ Objective:** Goal 1(Objective 1.1, 1.3), Goal 3 (Objective 3.3)

**Type of Tool:** Tracking Spreadsheet

### **Rationale**

#### **Communications Log**









(1) provides comprehensive communications including artifacts, EDU updates to STEM Center stakeholders who have requested notification through monthly memos via contact lists, semester updates to campus, presentations to visitors and to organizations/groups on-site and off-site, attendance at Upper Cumberland Study Council meetings and professional organizations, Live interviews, radio spots, PSAs, websites statistics and usage ([www.tntech.edu](http://www.tntech.edu) and [www.ucrsi.org](http://www.ucrsi.org)), press releases, Livestream, blogs, tweets, Facebook, capture the contact lists with student organizations.

(2) Success is defined as offering multiple marketing and reporting opportunities to increase accessibility for STEM Center stakeholders.

(3) All communications activities are tracked and sustained at the STEM Center and offer a real time evaluation of communications. The log is populated as

communications occur.

(4) All logs, collections and reports are maintained at the STEM Center. The log is totaled annually and analysis is provided to the Director of the STEM Center for annual review of activity.

-  Communications Log
-  1463675464\_summer\_edu\_update
-  20150804\_Fall2015\_EDU\_Update
-  Oakley STEM Center at Tennessee Tech\_FB\_Fans
-  Oakley STEM Center at Tennessee Tech\_FB\_Insights\_Reach
-  Oakley STEM Center at Tennessee Tech\_FB\_Notifications
-  Oakley STEM Center at Tennessee Tech\_FB\_Posts
-  Spring2016\_Edu\_Update

**Frequency of Assessment:** annually

### **Assessment: Grant Log**

**Goal/ Outcome/ Objective:** Goal 1 (Objective 1.1), Goal 3 (Objective 3.1, 3.3), Goal 4 (Objective 4.3)

**Type of Tool:** Tracking Spreadsheet

#### **Rationale**

##### **Grant Log**

(1) provides information about number of submitted proposals and funded proposals with title, PI, coPI, and senior personnel identified, amount requested/awarded, abstract, outcomes, participant statistics (numbers, names, counties, grade level, subject, etc.).

(2) Indicators of success show collaboration with faculty members (<10 annually) as PI and coPIs on proposal submissions for STEM education research and/or service projects.

(3) Submitted and funded proposals documented in the STEM Center. The Grant Log is populated as proposals are submitted and as grant awards are made.

(4) All proposals, results, records, tabulations and reports are maintained in the STEM Center. The Grant Log is reviewed annually, a summary of activity is made and shared with the Director and partnering faculty.

**Frequency of Assessment:** annually

### **Assessment: Outreach Event Log**

**Goal/ Outcome/ Objective:** Goal 1, Objectives/Outcomes 1.1, 1.2, 1.3

**Type of Tool:** Tracking Spreadsheet

#### **Rationale**

##### **Outreach Event Log**

(1) captures participation, demographics and collaborations of each outreach event within three days following event.



# Calendar of Events

## Educators & Supervisors

June 2016

- 21 | Code.org K-5 Curriculum Teacher Workshop  
9:30 a.m. – 3:30 p.m.

Description: Taught by Code.org affiliates who are experienced computer science educators, our free workshops will prepare you to teach elementary school computer science curriculum for grades K-5.

July 2016

- 19 | WCTE Ready to Learn Pre-K-K Teachers Explore PBSKids for Your Classroom Workshop  
8:30 a.m. – 3 p.m.

Description: Join WCTE's Cindy Putman for a fun-filled day of learning about how to utilize PBSKids in a classroom setting. Explore PBSKids, PBSKids Lab, PBS Parents and apps for learning. Find out what resources are available to enhance your classroom instruction. The focus will be on literacy, math, and science, and critical thinking skills for young learners so they will be Ready To Learn!

- 20 | PASCO Workshop

Elementary & Middle School Teachers  
9 a.m. – noon

High School Science Teachers Session from 1 p.m. – 5 p.m. with a subject matter focus of:

High School Chemistry & Biology from 1 p.m. – 3 p.m.

High School Physics & Environmental Science from 3 p.m. – 5 p.m.

Description: Realize the full potential of your PASCO technologies and help your students discover science by attending a summer institute. PASCO offers summer workshops to help you develop skills to take full advantage of teaching with probeware. In these in-depth workshops, you will team up with experienced facilitators and fellow science teachers in a collegial atmosphere and learn through an effective mix of demonstrations and hands-on activities.

- 29 | Biology in a Box Workshop  
9 a.m. – 3 p.m.

Description: Biology in a Box is a fun and challenging way for entire schools to enhance their life sciences curriculum at all grade levels, and to encourage student interest in STEM (science, technology, engineering, and mathematics) disciplines. The program employs a hands-on, inquiry-based approach to teach the wonders of the living world, as well as introducing the scientific methods and math skills we use to understand that world.

- 9-12 | E(x)PEDITION to Oakley STEM Center  
9 a.m. – 1 p.m.

- 16-19 | E(x)PEDITION to Oakley STEM Center  
9 a.m. – 1 p.m.

- 16 | Integrated Math PLC  
4 p.m. – 6 p.m.

- 23 | Lending Library Training  
4 p.m. – 6 p.m.

August

## Kids, Families & Community

July 2016

- 21 | Lego Robotics Activity Workshop for Elementary & Middle School Students  
9 a.m. – noon

Description: Learn about Lego Robotics as you build and program Lego Mindstorm Kits. This session will be led by Robert Scollon, TTU Robotics Club Outreach Coordinator, and is intended for upper elementary and middle school aged students.

- 21 | Robotics Programming Activity Workshop for Middle & High School Students  
1 p.m. – 4 p.m.

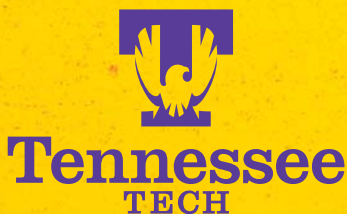
Description: Learn about Robotics Programming as you work with Finch Robots and other kits designed for the beginning programmer. This session will be led by Robert Scollon, TTU Robotics Club Outreach Coordinator, and is intended for middle & high school aged students.

- 22 | Lego Robotics Activity Workshop for Elementary & Middle School Students  
9 a.m. – noon NOTE: REPEATED SESSION from July 21

Description: Learn about Lego Robotics as you build and program Lego Mindstorm Kits. This session will be led by Robert Scollon, TTU Robotics Club Outreach Coordinator, and is intended for upper elementary and middle school aged students.

- 22 | Robotics Programming Activity Workshop for Middle & High School Students  
1 p.m. – 4 p.m. NOTE: REPEATED SESSION from July 21

Description: Learn about Robotics Programming as you work with Finch Robots and other kits designed for the beginning programmer. This session will be led by Robert Scollon, TTU Robotics Club Outreach Coordinator, and is intended for middle & high school aged students.



The Millard Oakley Center for the Teaching and Learning of Science, Technology, Engineering and Mathematics is a state-of-the-art STEM-education facility at Tennessee Tech in support of a campus-wide initiative to enhance existing models and develop new educational strategies in STEM-related fields.



[ntech.edu/stem](http://ntech.edu/stem)



Tennessee Tech University  
P.O. Box 5112  
Cookeville, TN 38505-0001



[ntech.edu](http://ntech.edu)

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# MILLARD OAKLEY STEM CENTER

EDU Update

Fall 2015

## Revitalizing Oakley STEM Lessons

Summer 2015 has been the season for revitalizing the STEMmobile. The Oakley STEM Team has worked hard to develop new lessons for use with all grade levels. The lessons have been designed by our team of master educators to optimize student learning outcomes that are fun, thought provoking, and project-based. The new lessons utilize the resources available to educators from the Oakley STEM Center's Lending Library, so educators who wish to use these lessons have three opportunities this fall to take advantage of our hard work.

- In the classroom: Educators may request the items and lesson plans from the Lending Library requests educators can borrow the equipment and lessons to implement in their classrooms.
- On the STEMmobile: When the STEMmobile visits your community, participants will have full access to the new lessons for the duration of the STEMmobile's stay.
- At the STEM Center: An E(x)PEDITION is the premier destination for your students. When visiting the STEM Center, educators will have a change to experience the new lessons that immerse their students in STEM.

We look forward to debuting these new standards-aligned lessons this Fall for the STEMmobile's third tour of the Upper Cumberland.



### STEMmobile Reservation

The STEMmobile is a wonderful piece of equipment that allows any community in the Upper Cumberland to reserve a week or more, so their youth can explore fascinating STEM topics. If you want to host at a school or within your community this fall, please feel free to make a reservation today.

Contact us:

[stem@tntech.edu](mailto:stem@tntech.edu)  
931-372-6573



STEMmobile setup and ready for action at Overton County Middle School

### In This Issue

- Revitalizing Oakley STEM Lessons
- STEMmobile Reservation Available
- How to Succeed in Science & Engineering Fair
- Safari Saturdays
- Shortest Day Celebration
- FAB Friday: Imagineering
- Fall 2015 Schedule
- Lending Library PLC

## Safari Saturdays

The Millard Oakley STEM Center is hosting two STEM Safari Saturdays this fall; Superhero Science, **October 31**, and Improbable Probability, **December 5**. These events cater to the early STEM learners from PreK - 3rd grade. Participants will interact with hands-on activities and technologies to develop new STEM skills that will help youngsters develop new appreciation for the world around them. Join us on this fall for fun the whole family will enjoy.

## How to Succeed at the Science & Engineering Fair

It is never too early to start thinking about your Science & Engineering Fair Project. It is our goal to spark the imaginations of young STEM enthusiasts in the Upper Cumberland, and help them achieve their goals through STEM.

If you are interested in attending a Science & Engineering Fair Workshop, we will be offering a one-hour workshop **every first Thursday this fall**. The workshops will assist in building a successful local fair and provide guidelines to a well presented project.

## STEM 3D Printing Workshop

The training will provide participants an overview of TinkerCAD™ web-based computer-aid drafting software. The focus of the 3D workshop will be on engineering design. Participants will develop the skills needed to understand the importance of design when working with 3D printers like the Makerbot Replicator™. Once participants have complete the workshop they will be able to create 3D objects, export .stl files, upload files to Thingiverse™ and 3D printers. The skills developed during this workshop may be used to promote 3D printing in the classroom and school systems. Workshops are every second Monday starting **September 14, 2015** from 4 pm - 7 pm.

## Shortest Day of the Year Celebration

Join the Oakley STEM Team for our last family engagement of the year where we celebrate the Winter Solstice by stargazing, snacking on shortbread cookies, and sipping hot cocoa. Explore the reason for the seasons, and why the northern hemisphere has such short days this time of year. Festivities will begin on Tuesday, **December 22, 2015** at 6pm.

## FAB Friday: Imagineering

This fall we will be hosting a single Fab Friday, **October 23**, that will spark the imagination of children and adults alike. Participants will explore the farthest reaches of the universe in our state of the art Virtual Theater Observatory, explore your scientific curiosities with hands on projects that will bolster young minds to explore the natural world, witness the new amazing work the STEM Center is doing with 3D printing, help real engineers solve problems, and learn how math will help you interpret the world in a more meaningful way.



*All students under the age of 18 must be accompanied by an adult family member or legal guardian.*



## Oakley STEM

### Educators:

An individual who leads young minds to discovering the world around them. Whether in a traditional classroom or at your local community meeting. If you seek to enrich children's minds with STEM, we want to help.

O A K L E Y  
  
C E N T E R

## Educator & School

### August 2015

18		Integrated Math PLC	4 pm - 6 pm
25		Lending Library Training	4 pm - 6 pm
27		Lending Library PLC	4 pm - 6 pm

### September 2015

1		Ready for TN Science PD	4 pm - 6 pm
15		Integrated Math PLC	4 pm - 6 pm
21		STEM 3D Printing Workshop II	4 pm - 6 pm
22		Lending Library Training	4 pm - 6 pm
24		Lending Library PLC	4 pm - 6 pm

### October 2015

6		Ready for TN Science PD	4 pm - 6 pm
12		STEM 3D Printing Workshop II	4 pm - 6 pm
20		Integrated Math PLC	4 pm - 6 pm
27		Lending Library Training	4 pm - 6 pm
29		Lending Library PLC	4 pm - 6 pm

### November 2015

3		Ready for TN Science PD	4 pm - 6 pm
9		STEM 3D Printing Workshop II	4 pm - 6 pm
17		Integrated Math PLC	4 pm - 6 pm

### December 2015

15		Integrated Math PLC	4 pm - 6 pm
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## Family & Community

### September 2015

3		Science Fair Workshop	4 pm - 5 pm
4&18		Virtual Theater Show	4 pm - 5 pm
12		STEMmobile @ Stations of Imagination	9 am - 5 pm
18		STEM @ Centennial Downtown Kick-off	5 pm - 8 pm
21		STEM 3D Printing Workshop II	4 pm - 6 pm

### October 2015

1		Science Fair Workshop	4 pm - 5 pm
2&16		Virtual Theater Show	4 pm - 5 pm
3		STEM Maker Space	10am - 2 pm
12		STEM 3D Printing Workshop II	4 pm - 6 pm
23		FAB Friday: Imagineering	6 pm - 8 pm
31		STEM Safari Saturday: Superhero Science	9 am -12pm

### November 2015

5		Science Fair Workshop	4 pm - 5 pm
6&20		Virtual Theater Show	4 pm - 5 pm
9		STEM 3D Printing Workshop II	4 pm - 6 pm

### December 2015

3		Science Fair Workshop	5 pm - 6 pm
5		STEM Safari Saturday: Improbable Probability	9 am -12pm



## Lending Library Professional Learning Community

The Millard Oakley STEM Center is developing a new series of professional development for educators seeking to implement Lending Library equipment into their classrooms. These sessions will provide Upper Cumberland educators with the tools and community needed to incorporate these great tools into everyday classrooms. Each session will host example lessons for participants to share and practice, as well as a facilitated discussion focused on student outcomes. We invite you to join the Lending Library Professional Learning Community every Thursday following Lending Library Training (forth Tuesday from 4:00 - 6:00 pm) from 4:00 - 6:00 pm. The workshop starts **August 27, 2015**.



## The Lending Library

### Your source for lab equipment in the classroom.

The Millard Oakley STEM Center is curating the largest catalog of classroom STEM equipment in the Upper Cumberland, and it is all available to our STEM User Group Members, and Lending Library Members.

### How do you join the Lending Library?

Its simple, attend one of the **FREE** Lending Library Training Sessions held every fourth Tuesday of the month from 4 - 6 pm.

Registration Link: <http://goo.gl/forms/OSAr5BTbv8>

### What's next?

After you finish Lending Library Training, you will have access to thousands of classroom instructional aids for two-week lending periods, or extended periods upon request. Plus access to Lending Library PLC, where each month we explore a new item from the Lending Library, and explore its benefit as an instructional aid.

If you would like a guest preview access to the [Lending Library](#) contact the Oakley STEM Team, 931-372-6573, [stem@ntech.edu](mailto:stem@ntech.edu).

## Contact Us

Give us a call for more information about our events and volunteer opportunities.

**Oakley STEM Center**  
155 W 7th Street  
Box 5112  
Cookeville, TN 38505

(931) 372-6573

[stem@ntech.edu](mailto:stem@ntech.edu)

Visit us on the web at  
[www.ntech.edu/stem](http://www.ntech.edu/stem)

Like us on Facebook:  
<https://www.facebook.com/stemcenter>

Follow us on Twitter:  
[@OakleySTEM](https://twitter.com/OakleySTEM)

## August 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18 ♦	19	20	21	22
23	24	25 ♦	26	27 ♦	28	29
30	31					

## September 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 ♦	2	3 ■	4 ■	5
6	7	8	9	10	11	12 ■
13	14 ●	15 ♦	16	17	18 ■ ■	19
20	21 ● ■ ♦	22 ♦	23	24 ♦	25	26
27	28 ●	29	30			

## October 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 ■	2 ■	3 ■
4	5 ●	6 ♦	7	8	9	10
11	12 ● ♦	13	14	15	16	17
18	19 ●	20 ♦	21	22	23 ■ ■	24
25	26 ●	27 ♦	28	29 ♦	30	31 ■

Key: ♦ Educator  
■ Family & Community  
● School



Visit us on the web at [www.tntech.edu/stem](http://www.tntech.edu/stem) for reservations and details.

# November 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 ●	3 ◆	4	5 ■	6 ■	7
8	9 ● ◆ ■	10	11	12	13	14
15	16 ●	17 ◆	18	19	20 ■	21
22	23 ●	24	25	26	27	28
29	30 ●					

# December 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3 ■	4	5 ■
6	7 ●	8	9	10	11	12
13	14	15 ◆	16	17	18	19
20	21	22 ■	23	24	25	26
27	28	29	30	31		

Key: ◆ Educator  
■ Family & Community  
● School



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Find out more about who likes your Page and who likes, comments, and shares your posts to improve your targeting.

See how they're similar or different from other people on Facebook.

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- Events
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- People**
- Local
- Messages

- Your Fans**
- People Reached
- People Engaged

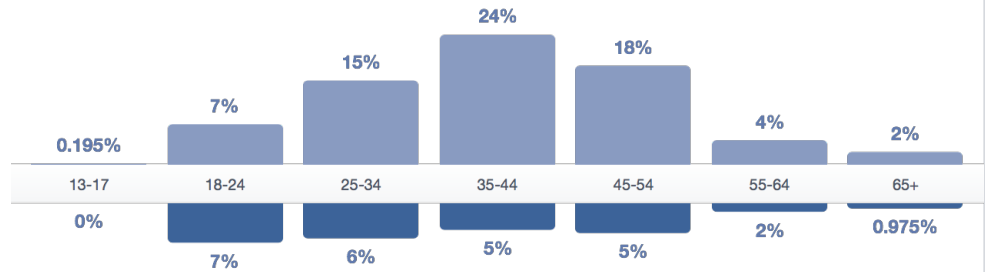
The people who like your Page

Women

72%  
Your Fans

Men

27%  
Your Fans



Country	Your Fans	City	Your Fans	Language	Your Fans
United States of America	485	Cookeville, TN	136	English (US)	484
Brazil	5	Campbell, TN	18	English (UK)	12
India	4	Algood, TN	17	Portuguese (Brazil)	5
Colombia	3	Sparta, TN	16	Spanish	4
Egypt	2	Bloomington Springs, TN	15	Spanish (Spain)	2
Taiwan	2	Livingston, TN	15	Thai	2
South Korea	2	Nashville, TN	14	Russian	1
Venezuela	2	Candyland Estates, TN	11	Arabic	1
Bangladesh	1	Baxter, TN	9	Korean	1
Nepal	1	Crossville, TN	8	French (France)	1



Honduras	1	Nash, TN	6
Iraq	1	Smithville, TN	6
Kazakhstan	1	Mount Juliet, TN	6
Thailand	1	Rickman, TN	5
		Chattanooga, TN	5
		Murfreesboro, TN	4
		Gainesboro, TN	4
		Monterey, TN	4
		West Knoxville, TN	3
		Brentwood, TN	3
		Lebanon, TN	3
		São Paulo, SP, Brazil	3
		Harriman, TN	3
		Spencer, TN	3
		Lafayette, TN	3
		Pleasant Hill, TN	3
		Dodson Branch, TN	2
		Memphis, TN	2
		Doyle, TN	2
		Johnson City, TN	2
		Old Antioch, TN	2
		Barueri, SP, Brazil	2
		Monroe, TN	2
		Cabimas, Zulia, Venez...	2
		Seymour, TN	2
		Taipei, Taiwan	2
		Allons, TN	2
		Fayetteville, TN	2
		Rancho Cordova, CA	2
		Gladeville, TN	2

	Hanging Limb, TN	2
	Green Hill, TN	2
	Dibrell, TN	2
	Hendersonville, TN	2
	Franklin Hill, TN	2

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### Understand Your Reach

[Do This Later](#)

Posts that get more likes, comments and shares show up more in News Feed and are seen by more people. Posts that are hidden, reported as spam or cause people to unlike your Page reach fewer people.

If you notice a spike or dip, look at what you posted that day to learn more about how you might have influenced your reach.

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- People

Overview

Promotions

Likes

**Reach**

Page Views

Actions on Page

Posts

Events

Videos

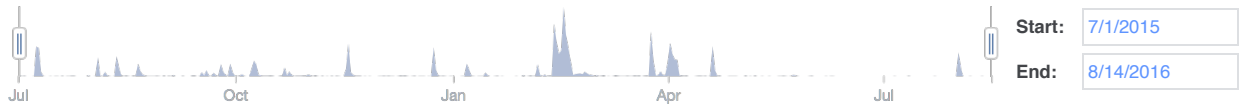
People

Local

Messages

Daily data is recorded in the Pacific time zone.

1W 1M 1Q

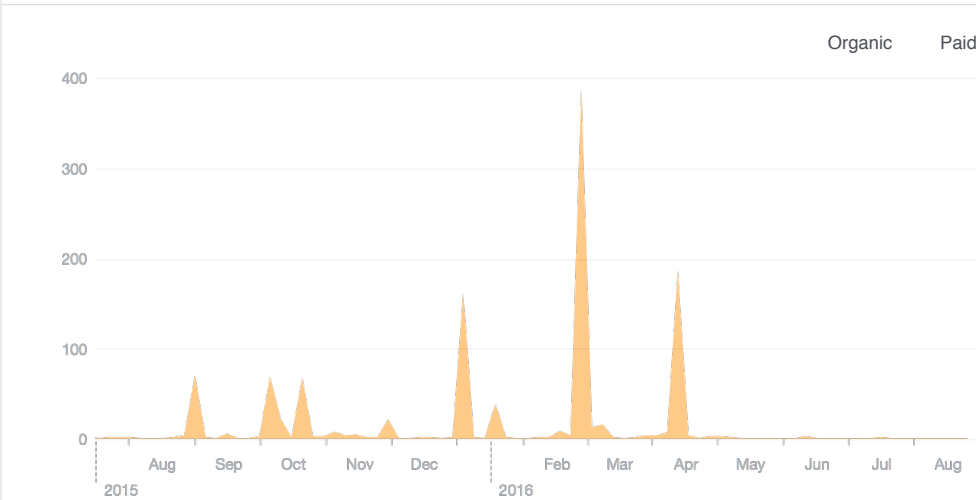


Start:

End:

### Post Reach

The number of people your posts were served to.



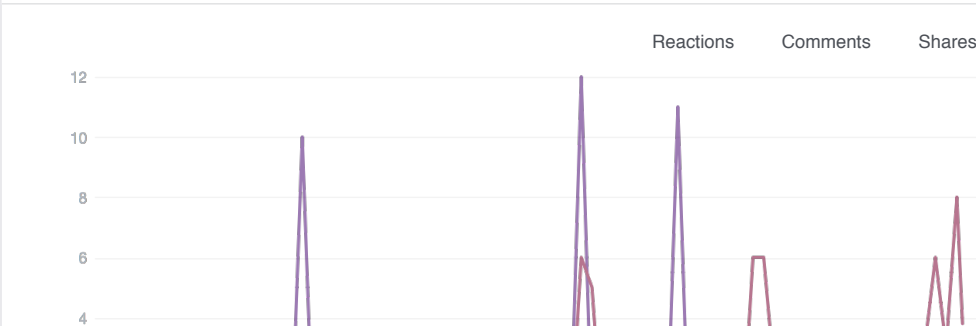
**BENCHMARK**  
Compare your average performance over time.

Organic

Paid

### Likes, Comments, and Shares

These actions will help you reach more people.

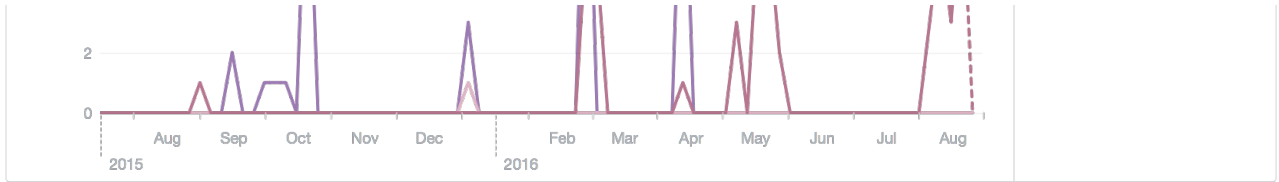


**BENCHMARK**  
Compare your average performance over time.

Reactions

Comments

Shares



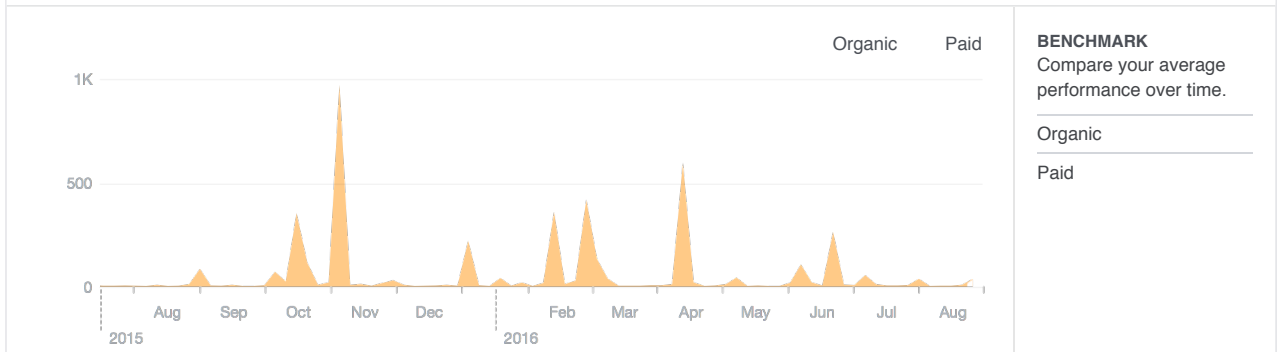
### Hide, Report as Spam, and Unlikes

These actions will decrease the number of people you reach.



### Total Reach

The number of people who were served any activity from your Page including your posts, posts to your Page by other people, Page like ads, mentions and checkins.





Notifications

6

- All
- Likes (4)
- Comments (1)
- Shares (9)
- Other

Activity

Requests 1

Invite Friends to Like This Page

Invite your friends to like Oakley STEM Cen...

- Shelia McKay
- Sarah Cavin McDonald
- Alyssa Harvill Suggs
- Karen Ramsey-Idem

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FRIDAY



Heather Thompson and Stacy Leonard Holden like Oakley STEM Center at Tennessee Tech.

Fri

THURSDAY



Erinn Mikolajczak Luke, BI Young and Amanda Sullivan like Oakley STEM Center at Tennessee T...

Thu

WEDNESDAY



WCTE checked in at Oakley STEM Center at Tennessee Tech.

Wed



AUGUST 7



Cyndi Bandy Vickers likes Oakley STEM Center at Tennessee Tech.

Aug 7

AUGUST 6



Tommy Gober checked in at Oakley STEM Center at Tennessee Tech.

Aug 6



AUGUST 1



Christi Whitworth and Jane Baker like your link: "https://photos.google.com/share/A..."

Aug 1



JULY 28



Dalton Redwine likes Oakley STEM Center at Tennessee Tech.

Jul 28

JULY 24



Xzhou SceenEE likes Oakley STEM Center at Tennessee Tech.

Jul 24

JULY 20



WCTE mentioned Oakley STEM Center at Tennessee Tech in a post.

Jul 20

JULY 19



Ashley Leigh checked in at Oakley STEM Center at Tennessee Tech.



Jul 19



JULY 14

Amy Michelle Fricks likes Oakley STEM Center at Tennessee Tech.

Jul 14

- JUL** 
-  **Leigh Ann Ray and Perihan Zeytin Fidan like Oakley STEM Center at Tennessee Tech.**  
 Jul 11
- JULY 1**
-  **Kate Spears checked in at Oakley STEM Center at Tennessee Tech.**   
 Jul 1
- JUNE 28**
-  **Kate Spears and WCTE mentioned Oakley STEM Center at Tennessee Tech.**  
 Jun 28
-  **WCTE checked in at Oakley STEM Center at Tennessee Tech.**  
 Jun 28
- JUNE 22**
-  **Breanna ThatChick likes Oakley STEM Center at Tennessee Tech.**  
 Jun 22
- JUNE 17**
-  **Gerald-Marcia Melton checked in at Oakley STEM Center at Tennessee Tech.**   
 Jun 17
- JUNE 16**
-  **Anh Tuan Nguyen likes Oakley STEM Center at Tennessee Tech.**  
 Jun 16
- JUNE 9**
-  **Kim Burroughs Huntley likes Oakley STEM Center at Tennessee Tech.**  
 Jun 9
- JUNE 5**
-  **Margaret Mason likes Oakley STEM Center at Tennessee Tech.**  
 Jun 5
- MAY 31**
-  **Brandy Davis likes Oakley STEM Center at Tennessee Tech.**  
 May 31
- MAY 23**
-  **Lesley Herron likes Oakley STEM Center at Tennessee Tech.**  
 May 23
-  **UT TSU Extension-Cumberland County checked in at Oakley STEM Center at Tenne...**   
 May 23
- MAY 20**
-  **Akhtar Nawaz likes Oakley STEM Center at Tennessee Tech.**  
 May 20

MAY 19



Lauren Leigh checked in at Oakley STEM Center at Tennessee Tech.

May 19



Bud Annd Monic and Chris Stuart like Oakley STEM Center at Tennessee Tech.

May 19

MAY 18



Miss Wright's second grade class checked in at Oakley STEM Center at Tennessee ...

May 18



MAY 11



Gypsy Caravan likes Oakley STEM Center at Tennessee Tech.

May 11

MAY 6



WCTE mentioned Oakley STEM Center at Tennessee Tech in a post.

May 6

APRIL 23



Jere Whitson Elementary School and WCTE checked in at Oakley STEM Center at T...

Apr 23



APRIL 22



Brenda Jones Graham would like to know your phone.

Apr 22



WCTE mentioned Oakley STEM Center at Tennessee Tech in a post.

Apr 22



Jane Baker shared a link on Oakley STEM Center at Tennessee Tech: "More informati..."

Apr 22



APRIL 20



WCTE tagged you in a post.

Apr 20



Jill K Haynes likes your event.

Apr 20



APRIL 19



Destiny Hale Guy likes Oakley STEM Center at Tennessee Tech.

Apr 19



Oakley STEM Center at Tennessee Tech posted in Safari Saturday

Apr 19


APRIL 18

Your Page Oakley STEM Center at Tennessee Tech has a Send Message button now.

Apr 18



Your Page **Oakley STEM Center at Tennessee Tech** has a **Send Message** button now.

 Apr 18



## Compare Post Performance

[Do This Later](#)

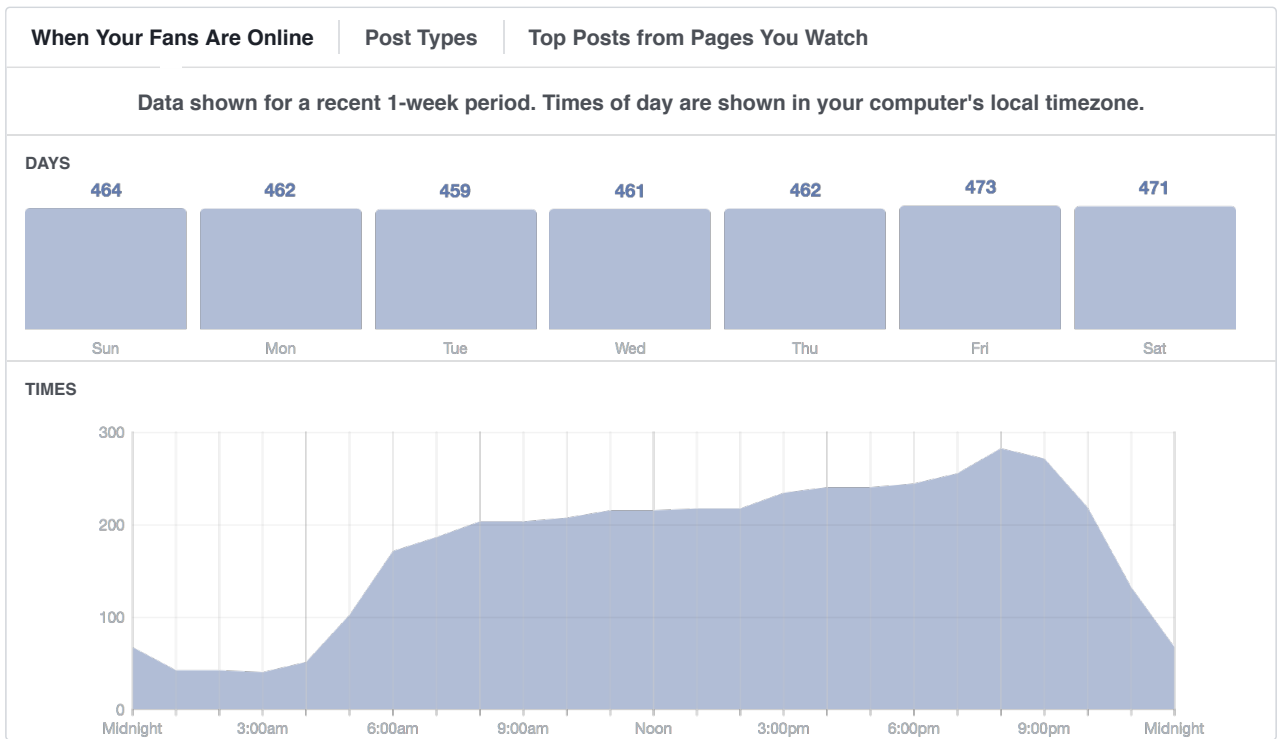
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Published	Post	Type	Targeting	Reach	Engagement	Promote
08/01/2016 9:39 am	<a href="https://photos.google.com/share/AF1QipO3upYsNPGfPE69FxlG">https://photos.google.com/share/AF1QipO3upYsNPGfPE69FxlG</a>			158	19 2	<a href="#">Boost Post</a>
08/01/2016 9:38 am	New pets at the Millard Oakley STEM Center!			70	8 0	<a href="#">Boost Post</a>
04/19/2016 1:05 pm	Safari Saturday			188	21 0	

04/01/2016 7:31 pm	Thanks to this weeks patrons and volunteers for making FAB Friday	55		0	0	<a href="#">Boost Post</a>
04/01/2016 7:27 pm	FAB Friday	268		67	0	<a href="#">Boost Post</a>
04/01/2016 7:16 pm	Art Applications brought out a Fiber Optic Organ for tonight's FAB Friday	130		7	2	<a href="#">Boost Post</a>
04/01/2016 7:10 pm	FAB Friday	33		56	1	<a href="#">Boost Post</a>
04/01/2016 7:02 pm	FAB Friday	7		88	0	<a href="#">Boost Post</a>
04/01/2016 6:33 pm	Check out one of the stations in the Laser Dark Rook!	192		5	3	<a href="#">Boost Post</a>
04/01/2016 5:28 pm	Come on out to FAB Friday starting in 30 minutes!	39		0	0	
03/31/2016 1:19 pm	Register now for your child's spot in this Saturday's STEM Safari	97		4	2	
03/31/2016 1:16 pm	Don't forget to sign up your 5th-12th grade students for FAB Friday	99		3	0	
03/28/2016 10:09 am	Register now for this week's Safari Saturday!	53		3	0	
03/28/2016 10:08 am	Don't forget to register for this week's FAB Friday!	49		3	0	
03/24/2016 1:47 pm	STEM Safari Saturday: Money Matters	153		13	0	
03/24/2016 1:44 pm	The Millard Oakley STEM Center at Tennessee Tech supports W	210		4	3	<a href="#">Boost Post</a>
03/24/2016 1:25 pm	Oakley STEM Center at Tennessee Tech's cover photo	0		5	12	<a href="#">Boost Post</a>
03/24/2016 1:16 pm	FAB Friday: Illuminating Optics	172		15	0	
02/16/2016 12:17 pm	Here's a recap from Friday night of Theta Tau's Caleb Addington	579		73	20	<a href="#">Boost Post</a>
02/12/2016 7:37 pm	Some of our students enjoying tonight's events	305		110	0	<a href="#">Boost Post</a>
02/12/2016 6:22 pm	Some of our students enjoying tonight's events	184		100	0	<a href="#">Boost Post</a>
02/12/2016 6:18 pm	Some of our students enjoying tonight's events	15		108	1	<a href="#">Boost Post</a>
02/12/2016 6:08 pm	Tennessee Tech's College of Nursing students volunteering their	425		32	11	<a href="#">Boost Post</a>
02/12/2016 5:59 pm	Come check out the Oculus Rift at FAB Friday! iCube	201		6	0	<a href="#">Boost Post</a>

02/08/2016 10:24 am	Don't forget to follow the link to sign-up for this weeks FAB Friday	67		0 1	
02/05/2016 11:54 am	Come join us Friday, February 12th as we celebrate STEM!	120		5 1	
02/05/2016 11:52 am	FAB Friday: I Love STEM	9		4 3	
01/06/2016 9:22 pm	Oakley STEM Center at Tennessee Tech shared Steve Spangler'	175		7 2	<a href="#">Boost Post</a>
12/23/2015 12:36 pm	Science & Engineering Fair Workshop	72		1 0	
12/23/2015 12:35 pm	Science & Engineering Fair Workshop	160		11 2	
12/23/2015 11:40 am	Ready for TN Science	66		1 0	
12/23/2015 11:40 am	Ready for TN Science	58		0 0	
12/23/2015 11:39 am	Ready for TN Science	54		0 0	
12/23/2015 11:20 am	Lending Library PLC	71		3 0	
12/23/2015 11:20 am	Lending Library PLC	56		0 0	
12/23/2015 11:20 am	Lending Library PLC	60		1 0	
12/23/2015 11:19 am	Lending Library PLC	55		0 0	
12/23/2015 10:21 am	Lending Library Training	47		0 0	
12/23/2015 10:21 am	Lending Library Training	44		0 0	
12/23/2015 10:20 am	Lending Library Training	29		0 0	
12/23/2015 10:20 am	Lending Library Training	34		0 0	
12/23/2015 10:17 am	Lending Library Training	32		0 0	
12/23/2015 9:52 am	Integrated Math PLC	37		0 0	
12/23/2015 9:50 am	Integrated Math PLC	30		0 0	
12/23/2015 9:48 am	Integrated Math PLC	35		0 0	

12/23/2015 9:45 am	Integrated Math PLC	46		1 0
12/23/2015 9:27 am	Learning Blade Workshop	39		1 0
12/23/2015 9:23 am	Learning Blade Workshop	112		4 1
10/21/2015 9:00 am	There is still time to sign up for a fun-filled evening with the Oakle	70		3 0
10/08/2015 4:22 pm	Integrated Math PLC	92		3 0
10/08/2015 4:20 pm	Ready for TN Science	95		3 0
10/08/2015 4:18 pm	Lending Library PLC	92		3 0
10/08/2015 4:17 pm	Lending Library Training	86		2 0
10/08/2015 4:15 pm	Integrated Math PLC	86		4 0
10/08/2015 4:10 pm	Shortest Day of the Year Celebration	73		4 1
10/08/2015 4:08 pm	STEM Safari Saturdays: Improbable Probability	72		2 0
10/08/2015 4:07 pm	How to Succeed at the Science & Engineering Fair	61		0 0
10/08/2015 4:05 pm	STEM 3D Printing Workshop	71		2 0
10/08/2015 4:01 pm	Virtual Theater Show	42		1 0
10/08/2015 4:00 pm	Virtual Theater	36		1 0
10/08/2015 3:59 pm	Virtual Theater Show	43		5 0
10/08/2015 3:58 pm	Virtual Theater Show	38		0 0
10/08/2015 3:57 pm	Virtual Theater Show	26		0 0
10/08/2015 3:55 pm	Virtual Theater Show	28		0 0
10/08/2015 3:54 pm	STEM 3D Printing Workshop	50		3 5
10/08/2015 3:51 pm	How to Succeed at the Science & Engineering Fair	25		0 0

10/08/2015 3:47 pm	STEM Safari Saturday	63		7 6		
10/08/2015 3:37 pm	STEM Fab Friday	46		2 0		
10/07/2015 3:00 pm	We are so glad to be partnering with the UTSI STEM Program, if	65		18 1		Boost Post
09/28/2015 3:00 pm	One of our great STEM Ambassadors making sure the 3D printer	119		20 5		Boost Post
09/24/2015 3:37 pm	Making and Manufacturing	104		7 0		
09/21/2015 8:34 am	Team Oakley had a great time this weekend at the Chattanooga	64		11 1		Boost Post
09/18/2015 10:10 am	It's that time again. Reed will be delivering two awesome shows t	64		4 0		
09/16/2015 9:35 am	We are looking forward to taking the STEMmobile to Chattanooga	50		2 0		Boost Post
08/21/2015 9:03 am	Don't miss your chance to sign up for this Journey to Mars.	59		3 0		Boost Post
08/20/2015 8:39 am	'Physics Girl' Tells How She Makes Kids Love STEM	108		1 1		Boost Post
08/11/2015 3:11 pm	Virtual Theater Show	167		7 6		
08/03/2015 10:43 am	Oakley STEM @ Putnam County Fair	143		8 0		
07/09/2015 8:35 am	Is anyone else watching the NASA feeds on Pluto? We can't wait	217		2 2		Boost Post
07/08/2015 9:58 am	Oakley STEM Center at Tennessee Tech shared Tennessee Tech	218		19 0		Boost Post

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2

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05/26/2015 8:33 am	Overview	If you haven't made your first Google query of the day, they are c	173		3 2		Boost Post
05/20/2015 9:18 am	Promotions	A great opportunity for those interested in bringing GIS to their cla	50		2 0		Boost Post
05/02/2015 8:00 am	Reach	<a href="http://www.npr.org/blogs/alltechconsidered/2015/04/29/40123665">http://www.npr.org/blogs/alltechconsidered/2015/04/29/40123665</a>	150		7 4		Boost Post
05/01/2015 9:18 am	Page Views	<a href="http://www.slashgear.com/lowes-in-store-and-online-3d-print">http://www.slashgear.com/lowes-in-store-and-online-3d-print</a>	51		0 1		Boost Post
04/30/2015 5:30 am	Posts	5 - Mendelevium discovery announced. University o	74		1 0		Boost Post
04/29/2015 5:30 am	Events	"April 29, 1768 - Georg Brandt died. Brandt was a Swedish chemi	65		1 0		Boost Post

04/28/2015 5:30 am	Local	"April 28, 2001 - First Space Tourist launched. Dennis Tito became the first person to travel to space on a private mission."	67		1	0	<a href="#">Boost Post</a>
Messages							
04/27/2015 5:30 am		"April 27, 2002 - Last telemetry signal received from Pioneer 10."	72		1	0	<a href="#">Boost Post</a>
04/26/2015 5:30 am		"April 26, 1986 - Chernobyl disaster occurred. The Chernobyl Nuclear Power Plant in Ukraine suffered a catastrophic failure of its primary containment structure, resulting in the release of a large amount of radioactive material into the atmosphere."	80		4	0	<a href="#">Boost Post</a>
04/25/2015 5:30 am		"April 25, 1900 - Wolfgang Pauli was born. Pauli was an Austrian physicist who was instrumental to the development of quantum mechanics, especially through his work on the exclusion principle."	83		3	0	<a href="#">Boost Post</a>
04/24/2015 5:30 am		"April 24, 1990 - Hubble Space Telescope launched. NASA launched the Hubble Space Telescope into orbit above Earth's atmosphere, allowing it to observe the universe in unprecedented detail."	78		3	2	<a href="#">Boost Post</a>
<a href="#">See More</a>							

# MILLARD OAKLEY STEM CENTER

EDU Update

Spring 2016

## Leading STEM Innovation through Partnership

The Millard Oakley STEM Center is leading the way for mobile STEM Education. We are proud to announce our partnership with the University of Tennessee Space Institute at Tullahoma (UTSI) to bring the STEMmobile to UTSI for their STEM week next summer. In addition to the weeklong celebration of STEM, the Oakley STEM Team will be working closely with UTSI to develop a Lending Library partnership to serve their community of schools.

We also want to acknowledge a second partnership within Tennessee Tech University as we have been working with TTU's College of Engineering's Clay N. Hixson Student Success Center. This group of talented young engineers is partnering with us to bring the STEMmobile to high schools. TTU's College of Engineering Ambassadors lead each activity in a peer-to-peer method of STEM education. This partnership will bring the STEMmobile to ten locations around the state to help promote the great opportunities STEM has to offer young Tennesseans.



### Oakley STEM Center and UTSI

Jacobs and ATA recently made a donation to the University of Tennessee Space Institute (UTSI) to bring the Millard Oakley STEMmobile, owned and operated by Tennessee Tech University (TTU), to the UTSI campus. The STEMmobile will be the centerpiece for STEM week. STEM week is designed to present and engage in outreach activities with 7<sup>th</sup> grade students from the Local Workforce Investment Area 06 which encompasses Franklin, Coffee, Moore, Bedford, Lincoln, Grundy, and Warren counties. This joint effort is in collaboration with AEDC Fox's Den and Hands-On Science Center of Tullahoma.



UTSI associate executive director James Simonton, TTU STEM coordinator Scott Eddins, UTSI program manager for STEM outreach Carole Thomas, Jacobs Technology Inc. senior vice president Ward Johnson, ATA deputy general manager Jeff Haars, and AEDC stem coordinator Jere Matty. Photo by Laura Horton

- Leading STEM Innovation through Partnership
- Oakley STEM Center and UTSI
- STEM Safari Saturdays
- STEM Fab Fridays
- How to Succeed in Science & Engineering Fair
- Learning Blade Workshops
- 62nd Annual Science & Engineering Fair
- Spring 2016 Schedule
- Spring E(x)PEDITION
- Lending Library PLC



## Safari Saturdays

### Money Matters

Investigate basic concepts of earning, wanting, needing, spending, saving, and sharing money. Learn about banks and their various purposes. **Saturday, February 20, 2016 from 9 am to 12 pm.**

### Detective Science

Search for evidence, gather clues, and discover how science can help solve a mystery. From dusting for fingerprints to analyzing handwriting, you will hone your sleuthing skills. **Saturday, April 23, 2016 from 9 am to 12 pm.**

## How to Succeed at the Science & Engineering Fair

It is never too early to start thinking about your Science & Engineering Fair Project. It is our goal to spark the imaginations of young STEM enthusiasts in the Upper Cumberland, and help them achieve their goals through STEM.

If you are interested in attending a Science & Engineering Fair Workshop, we will be offering a one-hour workshop **Thursday, February 4 and March 3, 2016 from 4 pm - 5 pm.** The workshops will assist in building a successful local fair and provide guidelines to a well-presented project.

## 62nd Annual Regional Cumberland Plateau Science and Engineering Fair

Springtime is almost here, and with it comes the Regional Science and Engineering Fair. **Saturday, March 19, 2016** will be the day we celebrate and enjoy a competition among the Upper Cumberland's brightest young minds. If you have a talented youngster who has a STEM idea they want to share, please be a part of this wonderful tradition.



The new 2015—2016 STEMmobile, supported by the College of Engineering's Makers on the Move.

## FAB Friday

### I ♥ STEM

Bring the ones you love to the first Fab Friday of the new year. We will be celebrating human health and the biological world. Participants will learn about blood typing, explore DNA, learn about EKG's and blood pressure, and test lung strength with spirometers. Festivities begin **Friday, February 12, 2016 from 6 pm to 8 pm.**

## Illuminating Optics

Come shine a light on one of science's greatest achievements. Optics have exponentially expanded scientists' understanding of the world. Join them in a learning opportunity like none other. Learn how astrophysicists use telescopes to find out new truths about the universe. Join biologists as they use microscopes to explore the unseen microscopic world, and find out how satellites are helping geologists learn more about our planet. **Friday, April 1, 2016 from 6 pm to 8 pm.**

O A K L E Y  
C E N T E R

## Spring E(x)PEDITIONs Return

The Oakley STEM Team is bringing back the Upper Cumberland's favorite STEM field trips. In **May 2016** we will offer eight sessions of E(x)PEDITION to educators and classrooms across the Upper Cumberland. Educators will choose from multiple hands-on, minds-on, cross-curricular activities for their classes to explore. In addition to an edutaining day away from the classroom, students will have the opportunity to observe the universe in the Virtual Theater.

Registration will begin **Monday, January 11, 2016**. E(x)PEDITION will start running **Tuesday, May 10 - 20, 2016**.

## Lending Library Professional Learning Community

The Millard Oakley STEM Center is developing a new series of professional development for educators seeking to implement Lending Library equipment into their classrooms. These sessions will provide Upper Cumberland educators with the resources and community needed to incorporate these great tools into everyday classrooms. Each session will host example lessons for participants to share and practice, as well as a facilitated discussion focused on student outcomes. We invite you to join the Lending Library Professional Learning Community every Thursday from 4:00 - 6:00 pm following Lending Library Training (every fourth Tuesday from 4:00 - 6:00 pm).

The Lending Library PLC returns **Thursday, January 28, 2016**.

## The Lending Library

**Your source for lab equipment wherever STEM happens!**

The Millard Oakley STEM Center is curating the largest catalog of classroom STEM equipment in the Upper Cumberland, and it is all available to our Lending Library Members.

### Who can join the Lending Library?

Formal educators, informal educators and parents. If your aim is to help build a STEM-literate future, the Lending Library is here to help.

### How do you join the Lending Library?

It's simple: attend one of the **FREE** Lending Library Training Sessions held every **fourth Tuesday** of the month from 4 - 6 pm.

Registration Link: <http://goo.gl/forms/OSAr5BTbv8>

### What's next?

After you finish Lending Library Training, you will have access to thousands of classroom instructional aids for two-week lending periods, or extended periods upon request. Plus, you'll get access to Lending Library PLC, where each month we explore a new item from the Lending Library, and explore its benefit as an instructional aid.

If you would like a guest preview access to the [Lending Library](#) contact the Oakley STEM Team, 931-372-6573, [stem@ntech.edu](mailto:stem@ntech.edu).

## Contact Us

Give us a call for information about our events and volunteer opportunities.

**Oakley STEM Center**  
155 W 7th Street  
Box 5112  
Cookeville, TN 38505

(931) 372-6573

[stem@ntech.edu](mailto:stem@ntech.edu)

Visit us on the web at  
[www.ntech.edu/stem](http://www.ntech.edu/stem)

Like us on Facebook:  
<https://www.facebook.com/stemcenter>

Follow us on Twitter:  
[@OakleySTEM](https://twitter.com/OakleySTEM)

## Oakley STEM

### Educators:

Individuals who lead young minds to discovering the world around them. Whether in a formal setting such as a classroom or informally through local community events, if you seek to enrich children's minds with STEM, we want to help.

#### STEM EDUCATION SHOWDOWN FOR TN SCHOOLS



Learning Blade is offering cash prizes to schools with the most lessons completed per student until April 2016!



**GRAND PRIZE \$1,000**  
**MONTHLY PRIZE \$100**



For more information or to get your Learning Blade account contact  
Joshua Snideman at [joshua@learningblade.com](mailto:joshua@learningblade.com)

Aligned to ELA and Math Standards!

**GET STARTED NOW!**



Register at [www.learningblade.com/tn](http://www.learningblade.com/tn)

O A K L E Y  
STEM  
C E N T E R

[tntech.edu/stem](http://tntech.edu/stem)

# Educators & Schools

## January 2016

14		Learning Blade Workshop	4 pm - 6 pm
21		Learning Blade Workshop	4 pm - 6 pm
19		Integrated Math PLC	4 pm - 6 pm
26		Lending Library Training	4 pm - 6 pm
28		Lending Library PLC	4 pm - 6 pm

## February 2016

2		Ready for TN Science PD	4 pm - 6 pm
16		Integrated Math PLC	4 pm - 6 pm
23		Lending Library Training	4 pm - 6 pm
25		Lending Library PLC	4 pm - 6 pm

## March 2016

1		Ready for TN Science PD	4 pm - 6 pm
15		Integrated Math PLC	4 pm - 6 pm
22		Lending Library Training	4 pm - 6 pm
24		Lending Library PLC	4 pm - 6 pm

## April 2016

5		Ready for TN Science PD	4 pm - 6 pm
19		Integrated Math PLC	4 pm - 6 pm
26		Lending Library Training	4 pm - 6 pm
28		Lending Library PLC	4 pm - 6 pm

## May 2016

10-13		E(x)PEDITION at Oakley STEM	9 am - 2 pm
17-20		E(x)PEDITION at Oakley STEM	9 am - 2 pm
24		Lending Library Training	4 pm - 6 pm

# Kids, Families & Communities

## January 2016

29		Virtual Theater Show	4 pm & 5 pm
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## February 2016

4		Science & Engineering Fair Workshop	4 pm - 5 pm
12		STEM FAB Friday: I Love STEM	6 pm - 8 pm
20		STEM Safari Saturday: Money Matters	9 am - 12pm
26		Virtual Theater Show	4 pm & 5 pm

## March 2016

3		Science & Engineering Fair Workshop	4 pm - 5 pm
19		62nd Cumberland Plateau Science & Engineering Fair	8 am - 5 pm
25		Virtual Theater Show	4 pm & 5 pm

## April 2016

1		STEM FAB Friday: Illuminating Optics	6 pm - 8 pm
23		STEM Safari Saturday: Detective Science	9 am - 12pm
29		Virtual Theater Show	4 pm & 5 pm

# January 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14 ♦ ●	15	16
17	18	19 ♦	20	21 ♦ ●	22	23
24	25	26 ♦	27	28 ♦	29 ■	30
31						

# February 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 ♦	3	4 ■	5	6
7	8	9	10	11	12 ■	13
14	15	16 ♦	17	18	19	20 ■
21	22	23 ♦	24	25 ♦	26 ■	27
28	29					

# March 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 ♦	2	3 ■	4	5
6	7	8	9	10	11	12
13	14	15 ♦	16	17	18	19 ■
20	21	22 ♦	23	24 ♦	25 ■	26
27	28	29	30	31		

<b>Key:</b>	♦	Educators
	■	Kids, Families & Communities
	●	Schools



Visit us at [www.tntech.edu/stem](http://www.tntech.edu/stem) for reservations and details.

# April 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 ■	2
3	4	5 ◆	6	7	8	9
10	11	12	13	14	15	16
17	18	19 ◆	20	21	22	23 ■
24	25	26 ◆	27	28 ◆	29 ■	30

# May 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10 ●	11 ●	12 ●	13 ●	14
15	16	17 ●	18 ●	19 ●	20 ●	21
22	23	24 ◆	25	26	27	28
29	30	31				

**Key:**

- ◆ Educators
- Kids, Families & Communities
- Schools



Visit us at [www.tntech.edu/stem](http://www.tntech.edu/stem) for reservations and details.

(2) Indicators of success are:

- a) delivery of 10 self-supporting budgeted offerings per year for P-12 teachers (>12 participants per event) and 4 external grant supported offerings for teachers (>20 participants per event) to engage in STEM education, standards-based, professional development based on LEA needs;
- b) collaborating with regional teachers (>15 participants annually) to offer STEM hands-on enrichment opportunities to engage P-12 students (>100 participants per event) during the school day on-site at the STEM Center for EXPEDITION field trips or off-site at their individual schools;
- c) provide 6 informal STEM education events per year for children, family members and community participants/volunteers to gain access to STEM learning in a manner that is easily relatable, interactive, purposeful and engaging while illustrating STEM principles;

(3) The Outreach Event Log captures the STEM learning opportunity specifics of each outreach event based on needs put forth by geographic needs assessments. It includes date, participant type of engagement, demographic and geographic information, number of participants, and volunteer facilitator participation and affiliations as each event occurs.

(4) Outreach Event Logs, reviewed quarterly, are maintained confidentially by the STEM Center.

 Outreach Event Log

 Current-2013 Event Outreach Log

**Frequency of Assessment:** per event

## **Assessment: Participant/Stakeholder Surveys and Interviews**

**Goal/ Outcome/ Objective:** Goal 1 (Objectives 1.1, 1.3, 1.4), Goal 2 (Objectives 2.1, 2.2, 2.3), Goal 3 (Objective 3.1), Goal 4 (Objective 4.3)

**Type of Tool:**

### **Rationale**

#### **Participant/Stakeholder Surveys and Interviews**

(1) professional development participants express overall satisfaction with professional development programs offered through the STEM Center; stakeholders are satisfied with STEM Center services.

(2) Indicators of success: 70% of the professional development participants agree or strongly agree that the PD advances their STEM content knowledge or pedagogical content knowledge, provides a model for effective instruction, and that workshop activities are relevant to curriculum standards and are applicable to classroom settings; 70% of stakeholders will indicate satisfaction with STEM Center services.

(3) The survey response rate(s) is expected to vary, but overall is 50% or greater and captures subjective assessment of outcomes, details of planned implementation and learning strategies, feedback and suggestions for future event planning. The surveys are conducted on-line annually for participants from all PD programs directly sponsored by the STEM Center; the stakeholders are interviewed individually, random sampling, or via focus groups with summary



write-ups. The results are reviewed annually to summarize strengths and weaknesses of the offerings.

(4) The surveys, results, reports and logs are maintained at the STEM Center and shared with the Director of the STEM Center.

**Frequency of Assessment:** Annually

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### **Assessment: Resource Usage Log**

**Goal/ Outcome/ Objective:** Goal 1 (Objective 1.4), Goal 2 (Objective 2.1, 2.3), Goal 3 (Objective 3.2, 3.3)

**Type of Tool:** Tracking Spreadsheet

#### **Rationale**

##### **Resource Usage Log**

(1) facility usage of Ray Morris Hall for STEM-related education; Lending Library will indicate that items are being checked out, that new items are being added; UCRSI.org site records indicate that electronic artifacts are being added to the on-line webportal, and that new members are being added to the digital professional learning communities (D-PLC) for STEM education.

(2) Success is defined as maximization (90%) of the facility use for STEM-related activities; a working inventory of 10,000 items in the equipment library with 1% growth in new items added per year; 10% of eligible members of the library checking out items; 100 new electronic artifacts being posted in the on-line webportal [www.ucrsi.org](http://www.ucrsi.org); and 50 new members being added into the D-PLC annually.

(3) Requestors use the TTU Facility Request form for Oakley STEM Center to schedule campus usage and off-campus groups' usage of Ray Morris Hall for STEM education or other related events. These paper files are scanned and added to the log files. The Lending Library site statistics and UCRSI.org site statistics are updated monthly and reviewed annually.

(4) The Resource Usage Log is made up of site reports, and a paper file of facility request forms. These are maintained at the STEM Center. The reports are shared with the Director of the STEM Center.

**Frequency of Assessment:** semester

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### **Results 1.1**

**Goal/Objective/Outcome Number:** Goal 1, Objective/Outcome 1.1

#### **Results**



**GOALS and OBJECTIVES**

**ASSESSMENTS**

Outreach Event Log

Grant Log

Communications Log

**Outreach 1.1 performance target** > 10 self-supported short duration PD events with teachers with > 12 participants per event, > 4 grant-supported long duration PD events with teachers > 20 participants per event

**1.1 STEM PD - Teachers** 1.1 Provide professional development (PD) opportunities for P-16 STEM teachers based on local needs, aligned with state and national standards, with best practices in research-based STEM education.

**490** teachers attended **7** distinct types of PD events, some with multiple offerings as detailed below:

**157** teachers attended **10** Lending Library Training workshops

**5** teachers attended **3** Lending Library PLC sessions

**50** teachers attended **2** Code.org Workshops

**86** teachers attended **6** Ready For TN Science PLC sessions

**103** teachers attended **9** Integrated Math PLC sessions

**144** teacher participants in **4** externally funded grants as detailed below:

**64** teachers attended **1** STEMmobile orientation through **MSP LCMC grant**

**50** teachers attended Innovative Educators Workshop **sponsored by TSIN**

**64** teachers receiving **96** hours each of professional development through **MSP LCMC grant**

**20** teachers receiving **60** hours of experiential learning on-line through **AEOP RESET grant**

**6** teachers

**3** EDU updates, quarterly, sent via email to teacher database of **1250** members

**8** teachers attended **3** RP/3 -D Modeling sessions

**16** teachers attended **1** Drive-In to Energy PD

receiving **160** hours of STEM research experiential learning on-site at 3 Army Labs vi **AEOP RESET grant**

**4** Noyce inductees, 1<sup>st</sup> year teachers, via **NSF Noyce grant**

### Attachments

No items to display.



### Results 1.2

**Goal/Objective/Outcome Number:** Goal 1, Objective/Outcome 1.2

### Results

**GOALS and OBJECTIVES**

**ASSESSMENTS**

Outreach Event Log

Resource Usage Log

Grant Log

**Outreach 1.2 performance target:** > 15 teacher-led events with students, > 100 participants per event

**1.2 STEM enrichment** 1.2 Provide STEM enrichment for P-12 students in collaboration with P-12 teachers.

- **Students**

**1641** students attended **21** EXPEDITIONS

**3500** students interacted with STEMmobile at **9** elementary/middle school sites.

**5000** students interacted with the STEMmobile at College of Engineering Makers on the Move visits to **4** High Schools

**13** schools used the STEMmobile

**10** undergraduate pre-scholarship students via the Noyce grant;

**4** scholarship students via Noyce grant;

**Attachments**

No items to display.



### **Results 1.3**

**Goal/Objective/Outcome Number:** Goal 1 (Objective 1.3)

#### **Results**

**GOALS and OBJECTIVES**

**ASSESSMENTS**

Outreach Event Log

Resource Usage Log

Communications Log

**Outreach 1.3 performance target:** > 6 events with family/student/community members attendees, > 100 participants per event

**1.3 Informal STEM - Community**

1.3 Provide programming to increase informal STEM education opportunities for the community.

**1665** participants in **11** distinct types of events, some with multiple offerings as detailed below:

**65** students attended ASC Girl Scout event  
**40** students attended Aspirations Award Ceremony  
**2** students attended 3D Printing Workshops  
**95** students attended Cub Scout Day Camp at Happy Haven  
**151** students and family members attended **3** FAB Fridays,  
**101** students (63) and family members (38) attended 1 Shortest Day event,  
**189** students (122) and family members (67) attended 10 Maker Camo Sessions  
**397** students (218) and family members (179) attended **4** Saturday STEM Safaris;

Virtual Theater: **6** radio spots

**2349** viewers in **4** press releases Virtual Theater in **48** distinct events

**12** updates of tntech.edu/stem website, monthly

**1641** K-12 students through EXPEDITIONS program, and

**456** community members and university students attended Open Viewings, and special scheduled visits

**252** as part of FAB Friday and Shortest Day events.

**450** children and families visit STEMmobile at Stations of Imagination  
**45** community members attended TED Talk event in partnership with WCTE, leading into Nature Fest  
**130** Student, Family and Community participants for UC Making and Manufacturing Event

**Attachments**

No items to display.



**Results 1.4**

**Goal/Objective/Outcome Number:** Goal 1 (Objective 1.4)

**Results**

**GOALS and OBJECTIVES****Assessments**

## Resource Usage Log

**Outreach 1.4 performance target:** > 10,000 lendable items in lending library with 1% increase annually, > 10% of eligible members checking out resources, > 100 electronic artifacts posted annually to *ucrsi.org*, > 50 new members added to D-PLC annually

**1.4 Resources**

1.4 Provide resources for P-16 STEM teachers: a) lending library of STEM instructional equipment and b) on-line webportal for electronic curation of workshop materials, lesson plans, units, modules, and videos and for formation and support of digital professional learning communities (D-PLC).

**Lending Library**

**57** educators of **560** eligible members checked out **1905** items

**1500** unique STEM instructional items are in inventory, often with 10 to 12 replicates for loaning multiples for use in classrooms >> 10,000 items, target met

**UCRSI.org webportal**

**961** members of the online webportal (added 131 members)

**167** resources, **57** groups, **50** articles, **36** member blogs, **1134** tags in the on-line portal.

**Attachments**

No items to display.

**Results 2.1**

**Goal/Objective/Outcome Number:** Goal 2 (Objective 2.1)

**Results**



**GOALS and OBJECTIVES**

**Assessments**

Resource Usage Log

Stakeholder Interviews

**Academics 2.1 performance target:** > 6 faculty per semester

**2.1 STEM Faculty Associates - teaching teachers** 2.1 Support faculty in their delivery of research-based STEM instruction for future teachers.

7 faculty teaching STEM educator courses

Kathy Rust  
Holly Anthony  
Jane Baker  
Steve Robinson  
Peter Li  
Steven Hayslette

**6** informal interviews conducted with faculty teaching in the Center to collect feedback on satisfaction and suggestions for improvement.

math, early childhood, chemistry, physics, earth sciences, biology; schedule rooms, use equipment, shared office space.

**Attachments**

No items to display.



**Results 2.2**

**Goal/Objective/Outcome Number:** Goal 2 (Objective 2.2)

**Results**

**GOALS and OBJECTIVES**

**ASSESSMENTS**

Resource Usage Log  
and  
Outreach Event Log

Communications Log

Participant Surveys

**Academics 2.2 performance target:** > 10 students per semester

**2.2 STEM Ambassadors** 2.2 Develop and maintain a STEM Student Ambassador program for TTU students to learn effective ways to support STEM education. **155** students have participated as trained volunteers.

**13** UAS and **3** FWS students  
Orientation/training for students  
Signed Worker Agreements with each to detail duties and task for each semester  
Assigned into **7** Oakley STEM Center Teams as working members

Informal interviews with sampling of students to assess  
Additional training needs  
Clarification of work duties and tasks

**12** HPEO students

Orientation and training for Outreach Events  
Team support

**Attachments**

No items to display.



**Results 2.3**

**Goal/Objective/Outcome Number:** Goal 2 (Objective 2.3)

**Results**

**GOALS and OBJECTIVES****ASSESSMENTS**

Outreach Event Log

Resource Usage Log

**Academics 2.3 performance target:** *> 3 events per semester, > 15 courses per semester*

**2.3** 2.3 Facilitate TTU  
**Access** department, faculty,  
**STEM** and student use of  
the Center for  
integrated STEM  
programs and  
courses for STEM  
majors on campus.

Visits with **2**  
department  
leadership to  
explain and  
encourage use of  
STEM Center  
facilities  
Meeting with  
University  
Advancement Team  
to discuss  
endowment and  
other fund-raising  
needs for Oakley  
STEM Center  
sustainability

**55** STEM content courses  
were taught in Ray Morris  
Hall in 2015/2016  
**85** distinct requests for  
facility use by:

**10** TTU Student Orgs,  
**24** internal TTU  
faculty/department/un  
**4** grants, and  
**8** external community  
organizations

**Attachments**

No items to display.

**Results 3.1**

**Goal/Objective/Outcome Number:** Goal 3 (Objective 3.1)

**Results**

**GOALS and OBJECTIVES**

**ASSESSMENTS**

Grant Log

Communications L

**Research 3.1 performance target:** > 10 interactions in individual/group settings: annually

<p><b>3.1 Collaboration</b></p>	<p>3.1 Foster inter-collegial and multi-campus collaboration for STEM education research.</p>	<p><b>11</b> proposals, total  <b>\$2,951,496.30</b>  <b>7</b> new grant activations, total  <b>\$972,966.00</b>  <b>2</b> continuing grants with available funds</p> <p>NSF Noyce,  <b>\$722,712.52</b>                  NSF MSSM,  <b>\$138,521.76</b></p>	<p><b>10</b> research funding opportunities share with 25 faculty  <b>11</b> proposals receive development assistance;  <b>3</b> dialog/visits occur with lead agency personnel  <b>8</b> Letters of Partnership and Collaboration for NSF proposals  <b>6</b> Liaison efforts to regional LEAs on behalf of proposal developments  <b>8</b> Consultations regarding STEM resources, and research literature reference</p>
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**Attachments**

No items to display.



**Results 3.2**

**Goal/Objective/Outcome Number:** Goal 3 (Objective 3.2)

**Results**

## GOALS and OBJECTIVES

## ASSESSMENTS

Resource Usage Log

Communications Log

**Research 3.2 performance target:** > 4 events per semester

**3.2 Facility as Lab** *3.2 Promote and support the learning studios, interview rooms, and other STEM Center resources as research labs and research support.*

Learning Studios as recording rooms for observation-based physics education research,  
  
regular usage for Dr. Robinson for PHYS course and for grant administered through Arts and Sciences, approx. 25 times/semester

**4** letters of support written for Center administered proposals  
**8** letters of support written for non-Center proposal submissions  
email/dialog with six faculty members as they write NSF proposals submitted via other departments and Centers on campus.

PhD Graduate Student, Nikolas McGehee  
PhD Graduate Student, Abir Eldaba, graduated May 2016  
(7) UG paid hourly from STEM Operating or grants

Jasmine Robinson  
Kristine Seay  
Amy Fricks  
Tyler Rye  
Ryan Thurston  
Kishen Patel  
Samantha Fletcher

### Attachments

No items to display.



### Results 3.3

**Goal/Objective/Outcome Number:** Goal 3 (Objective 3.3)

### Results

**GOALS and OBJECTIVES**

**ASSESSMENTS**

Communications Log

Resource Usage Log

**Research 3.3 > 6 events annually**

**3.3 Disseminate** 3.3 Disseminate STEM education research and development occurring in the university and in the region.

NSF STEP MSSM project poster on display in the Ray Morris Hall Lobby to share outcomes  
 Building Capacity for TN Science Education, presentation at National Science Teachers Association Annual Convention, with STEMobile Project Stories

**3** faculty received travel support for attending STEM Conferences

Suters  
 Ramey  
 Baker

ASEE-SE 2015 Best of Zone Paper Award, presented at ASEE National Conference, "Upper Cumberland Rural STEM Initiative (UCRSI) STEMmobile: a sustainable model for K-12 outreach"  
 Mobile Laboratory Coalition, National Conference, paper and presentation

Social Media (twitter, facebook, etc) to share events and facts

Facebook, 77posts, 125 Average Reach, 515 Likes  
 Twitter, 33 posts, 175 Followers  
 EDU Updates, 3 posts, 1250 Average Reach  
 Radio Spots, 6  
 Press Releases, 2

Summaries of projects posted on tntech.edu/stem website;  
 Hosting National Board for Public Broadcasting, in partnership with WCTE

**Attachments**

No items to display.



**Results 4.1**

**Goal/Objective/Outcome Number:** Goal 4 (Objective 4.1)

**Results**

**GOALS and OBJECTIVES ASSESSMENTS**

Communications  
Log

Events Log

**Administration performance targets:  
meet Advisory Council annually**

<b>4.1 Council</b>	4.1 Meet with Advisory Council to receive input on Center goals objectives and feedback on outcomes.	Verbal requests made to potential members of Advisory Council intent to form from prior 2012-2014 UCRSI project's Advisory Council On target for formation in 2016/2017, first meeting in February 2017
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**Attachments**

No items to display.



**Results 4.2**

**Goal/Objective/Outcome Number:** Goal 4 (Objective 4.2)

**Results**



**GOALS and OBJECTIVES**

**ASSESSMENTS**

Communications Log

Events Log

**Administration performance targets: conduct self-study of process documentation twice per year**

**4.2 Documentation** 4.2 Establish, maintain, and update procedures for each facet of Center programming.

**6** Teams formed among staff and students as cross-functional work teams to support key aspects of Center programs

Staff Retreat for Team Alchemy Training

- Communications Team**
- Outreach Team**
- External Funding Team**
- Special Projects Team**
- STEMmobile Team**
- Lending Library Team**

**Monthly** meetings with Team Leaders to discuss details of team-work to support Center programs during planning and post-delivery.

Shared document storage on Center server for staff to access as needed from their desk. Using Office 365 and **Sharepoint** for team members, staff and students, to share calendars, task lists, group memory, meeting agendas, etc.

**Attachments**

No items to display.

**Results 4.3****Goal/Objective/Outcome Number:** Goal 4 (Objective 4.3)**Results****GOALS and OBJECTIVES****ASSESSMENTS**

Communications Log

Events Log

**Administration performance targets: partner interactions > 6 per year****4.3 Partnerships**

4.3 Develop and maintain relationships with key individuals from external groups.

**8** meetings with Supervisors of Instruction Study Council

**4** meetings with Advanced Manufacturing/ Pre-Engineering Pathways subcommittee of Highlands Workforce Development and Education Committee

**1** meeting with Directors of Schools Study Council to provide update on overall K-12 interactions with regional LEAs

**3** meetings with TN STEM Education Leadership Council to support statewide strategic plans for STEM education

**6** Upper Cumberland LEA site visits, meeting with central school offices and UCRSI Hub Schools

**6** meetings with TN's Science Standards Recommendations Committee

**4** meetings with TN Dept of Ed's Personalized Learning Task Force

Rotary Presentation (~**100** attendees)

TSIN Summit Presentation (~8 attendees)

MLC National Convention (~12 attendees)

ASEE National Meeting (~3000 attendees)

Manufacturers contacted for Teacher Field Trip (8 sites)

## Attachments

No items to display.

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### Improvements to Assessment Plan

#### Improvements to Assessment Plan

The planned improvements for the Assessment Plan in 2015/2016 were partially implemented and are therefore re-listed below in bulleted form. Additional numbered notes are made to indicate actions in 2016/2017 for improvement.

Clarify and update staff tasks in order to identify what each position collects and maintains in terms of the Center data records.

Outreach Event Log is maintained by Administrative Associate III (Hatley). Now with input from Outreach Team this log will be maintained on the Sharepoint site by the Outreach Team, led by the Instructional Training Coordinator (Eddins).

Participant/Stakeholder Surveys will be created and conducted by Instructional Training Coordinator (Eddins) on a quarterly basis.

Resource Usage Log will be maintained by Information Technology Associate 9 (TBD) once that position is filled with a full-time person; anticipated to be filled in September 2016.

Grant Log is maintained by Financial Associate III (DeBord) and is part of the External Funding Team's quarterly discussion.

Communications Log will be maintained by Administrative Associate II (TBD), once a full-time person is in the position again. (The position has been filled by part-time people since October 2015).

Develop a checklist of all the Center's IE assessments and the data required for each assessment and indicate who is responsible under what timeframe to update records.

The Director will meet monthly with each staff responsible for an assessment instrument and will coordinate with that person to determine the "who, how, and what and when" required to assure the assessment is maintainable and used by others to input data as required.

Sharepoint is the new shared usage of data approach for the Center's Teams and thus the assessments will be kept on Sharepoint, moving them over from the shared drive kept internal to the Center.

The Director and Instructional Training Coordinator will research and review what other STEM Centers use to determine teacher participant satisfaction, student participant satisfaction, etc for both formal and informal outreach.

The Director and ITC will meet quarterly in 2016/2017 to determine appropriate STEM Center peers in the nation. The Director will coordinate the work of the two Center graduate students (approximately 20% of each

student's time commitment) to contact these peers to make queries about their assessment plans and request they share their results and instruments, and to collect information about STEM Education assessment instruments reported in the research literature.

Simplify the Participant/Stakeholder survey and interview process based on the study above and implement in 2016/2017.

The Director and ITC will develop recommendations for how and when to conduct useful surveys, using the summary information collected by the graduate students.