CARCAM

STEM*/ROBOTICS CAMP HANDBOOK 2012

A "How To" Promising Practices Guide to Summer STEM CAMPS

CARCAM
Consortium for Alabama Regional Center for Automotive Manufacturing

NSF

STEM = Science, Technology, Engineering, Math

Consortium for Alabama Regional Center
for Automotive Manufacturing (CARCAM)

Who Are We?

The CARCAM consortium is one of 36 regional National Science Foundation ATE Centers. We are educating today's workforce in cutting–edge technology. Our curriculum is specifically designed and developed with input from Alabama Department of Postsecondary Education, regional industry and implemented in today's highly advanced technical manufacturing industry.

Why CARCAM?

CARCAM Consortium Colleges offer students the opportunity to learn advanced technology skills that drive the regional economy.

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2012 CARCAM

Special thanks to Dr. Marilyn Barger and the Florida ATE Center for their model and collaboration on this promising practices guide. Please see their resource at: http://www.fl-ate.org/projects/camps.html

INTRODUCTION

This promising camp practices guide takes you through the process of planning, developing, and offering successful STEM Camps for high school students interested in automotive technologies and manufacturing in your community. The STEM Camps are designed to give students the chance to have fun, learn a lot, and gain hands on experience with a look at a variety of careers in the automotive industry.

The guide is based on 6 years of successful summer STEM Camps offered in the Southern Automotive Corridor by colleges in the CARCAM consortium. STEM Camps make the learning experience engaging and exciting for the students. The STEM camp graduates have a positive, informed outlook about their potential college and career opportunities because of their hands on activities and experiences.

"Everything we've participated in was great. I wasn't expecting to learn so much about the capabilities of a robot. I was able to write my name with it. I came here wanting to learn about technology and expand my career choices. This has really made me think about pursuing a career in robot engineering." STEM Camp Graduate

Some Statistics:

- **Total Cumulative CARCAM Grant Sponsored STEM Camps – 47 weeks (1-2 each summer) - Camps for Secondary Students from 2006-10**
- **1,111 secondary students participated in STEM Camps from grants inception thru Summer 2010 (271 = 2010)**
- **Average 76% of STEM Camp students – female and/or minority**

CARCAM STEM CAMP STATS

STEM Camp	# of 2010 Participants	Grant Cumulative
Number of STEM camp participants	2010-2011 data 271 Students	2006-2011 data 1,111 Students
Number of STEM camp participants who are female and/or minority	160 Students	844 Students (76%)
Number of high school students who participate in STEM Camp enrolled in at least one high school advanced STEM courses	131 Students	484 Students

This is our first edition of this guide and we offer it as a sample template for planning and delivering successful STEM camps. We certainly hope you find it useful. And, we welcome your feedback and comments.

Contact us:

CARCAM Center
CARCAM.org or Beverly Hilderbrand at bhilderbrand@gadsdenstate.edu

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GOALS AND BASIC STRUCTURE OF A STEM CAMP

Science, Technology, Engineering, and Math (STEM) and/or Robotics Camps are designed to provide academic enrichment and connect STEM concepts to real world jobs. The camps cater to high school students who are interested in careers in the automotive industry or a related technical field.

Camps take place in the summer and are 5-9 days long. Approximately twenty students currently in grades 10-12 (including both "rising" and "graduating" high school seniors) are selected to attend the camps through a competitive application process. The application process requires students to submit a transcript, a camp application, a resume, a one to two-page essay on a given topic, and a letter of recommendation. Prior to being chosen to participate, students may be interviewed by the sponsoring college's camp team. Colleges may choose to award a per diem (e.g., $40 per day) and a travel allowance. Scholarships may be available. Stipends (e.g., $100-$200) may also be awarded for those students with perfect attendance throughout the camp activities.

Camps engage students by offering:

- Hands on STEM projects and activities
- An introduction to automotive industry-related topics such as drafting, industrial electronics, welding, and automotive service
- Campus tours
- Tours of auto manufacturer and supplier plants
- Conversations with industry professionals
- Conversations with college personnel who can help the students plan their educational pathways

A light breakfast and lunch are provided each day along with breaks, snacks, and water. Bus transportation is used to move the students around during the camp.

Since 2006 annual STEM Camps have been held on the campuses of Gadsden State Community College, Trenholm State Technical College, Wallace State Community College, Drake State Community College, Lawson State Community College, Central Alabama Community College, Jefferson State Community College, and most recently at. Each college offers its own custom version of a summer camp. Colleges are encouraged to tailor activities to their own programs, faculty specialties, learner demographics, and participating high school communities.

At the conclusion of a STEM Camp, students typically will be able to:

- ✓ Identify exciting careers in technical fields available at their local colleges
- ✓ Articulate what fields, industries, and activities are of most interest to them
- ✓ Demonstrate awareness and new knowledge regarding STEM topics and opportunities
- ✓ Connect to local industry representatives about technology jobs and the training, background, and experience needed for these jobs

- ✓ Interact with other high school and college students in action-packed, hands-on, FUN learning experiences
- ✓ Interact with college faculty and staff regarding campus programs, services, and resources

Sample Agenda:

- **Daily students are placed in groups/<u>teams</u> and experience a hands-on project in a technical lab on college campus**
  - **Industrial Automation**
  - **Electronics, Electrical**
  - **Collision Repair**
  - **Welding**
  - **Mechanical Design**
- **Guest speakers from college departments & local industries**
  - **CARCAM, Financial Aid, Student Activities, Counseling & Advising, Student Support Services**
- **Industry Tours**
  - **Hyundai, Mercedes, Toyota, Honda, AL Power Plant, etc.**
- **Robotics competitions & technology presentation with parental involvement**

FUNDING AND COSTS

Funding Model

STEM CAMPS are funded by the National Science Foundation CARCAM grant with some in-kind match from the colleges. Some materials and equipment expenses are funded by various industry partners. Since each college offers its own unique camp, funding may vary. For example, a financial incentive to participate in the STEM Camp may be important given your location and local circumstances (e.g., competition for other summer camps in the area). The estimated expense is approximately $50 per day per student or $250 per person for a 5-day (weeklong) camp.

Expenses to Be Considered

Computers and Software, and Facilities and Equipment: Each college offering a STEM Camp needs to provide appropriate technology stations, equipment, and access to facilities. Each college determines its own set of on-campus activities and hosted industry tours geared for the disciplines and programs offered at the college and by employers in the community or region.

Instructors: Each college provides a team of instructors for the summer camp experience. The majority of the camp staff is made up of community college faculty members within the various programs who volunteer their time and effort (i.e., faculty on summer contracts). Secondary instructors may be recruited and compensated. Some colleges have assistance from Career Coaches or recruiting staff members that work with the faculty members. All camp faculty members are college-approved (appropriate credentials and state-required background clearances). Faculty involved become part of the planning and development team leading up to the launch of the camp. They help set the agenda and the sequence of learning activities, as well as design specific hands-on experiences, projects, and demonstrations for the students. They facilitate these experiences and interact with the students throughout the camp.

Food and Beverages: Active learners need sustenance. The camps provide a light breakfast and lunch, as well as snacks and water. These items are offered daily and align to the schedule of the camp activities, breaks, and on versus off campus experiences.

Materials and Supplies: Each college camp team prepares the specific materials and supplies campers need for the week. There is an agenda, a list of resources, campus maps, and requisite forms for students to complete in a handout packet distributed on the first day. Additionally, students receive supplies like name badges, note paper, pens, pencils, memory sticks, and t-shirts provided by industry. The majority of the colleges provide each student a backpack (may be termed a “survival kit”) for convenience for all their camp supplies and projects. Finally each instructor overseeing a lab activity or experience may give out descriptions, problem solving handouts, worksheets, or guidelines.

Bus Transportation: Bus transportation from participating high schools districts needs to be arranged for the students. They are taken by bus to college campuses for daily camp activities and to and from industry plan tours. Some colleges have buses or a fleet of vans that are utilized also. The coordination happens through the high school representative and regional resources. The transportation needs to be lined up well in advance and confirmed before the camp starts.

FACILITIES AND EQUIPMENT

The Buildings

Each college sponsoring a STEM Camp supplies the facilities, meeting rooms, classrooms, lab spaces, and meal/break areas. The college camp team works with the operations and facilities personnel to reserve appropriate space for the camp experience and activities. Additionally, when choosing locations on campus, safety, accessibility, parking, and designated drop off and pick up areas for campers, should be considered.

The Camp Classroom

Each college provides labs, classrooms, and stations for the hands-on learning activities. Faculty design their configurations for optimum learning, group work teams, demonstrations, and individual hands-on work. Each college is encouraged to offer unique lab settings and technology demonstration stations pertinent to their programs of study (e.g., Robotics, Welding, Electronics, Machining, Drafting, Graphics Design, and Industrial Automation). The customization makes each camp a uniquely different experience for the students.

Equipment

Required equipment varies by camp. Examples of equipment may include: robot kits, Lego Mindstorm robots, aluminum materials, welding materials, compasses, safety glasses, soldering kits, compass, etc. Each college campus is responsible for providing the appropriate hardware, software, and materials for the STEM/Robotics Camp learning activities.

Sample Materials/Supplies

- ☐ Supplies (name tags, folders, pens, note pads, certificates, etc.)
- ☐ Calculators or other such tools
- ☐ Anything else required for planned activities in the classroom
- ☐ Daily sign in sheets
- ☐ Ice breaker games (see sample in appendix)
- ☐ Problem solving handouts (see samples in appendix)
- ☐ Signage (directional signage, identification of labs and classrooms, meeting areas, restrooms)

PLANNING AND COORDINATION

Coordinating the Camps

Each college plans and prepares its own camp. Participating faculty, career specialists, high school liaisons, and/or high school and community college outreach staff are involved in the design, planning, recruiting, and communication about the camps. Each college selects individuals and puts together a "camp team" or committee with a coordinator or leader with responsibilities delineated for each person. Conference calls, meetings, and emails with planning updates are used to keep the team informed and the logistics on track.

Camp coordinators, with the faculty, create the camp agenda. Communication with the press is also handled by the camp coordinators/team leaders. High school counselors, community college career coaches, and/or college faculty visit high schools and present information about the camps to the appropriate level student classes.

Recruiting Faculty Members for Camp

- Targeted email or hosted meeting to invite past faculty participants
- Email outreach to new departments and/or additional faculty participants
- Email announcements on campus
- Word of mouth

Recruiting Industry Partners for Camp

- Targeted email or hosted meeting to invite past industry representatives
- Email outreach to new industry participants
- Email to advisory boards and professional groups in the community
- Word of mouth

Recruiting Students for Camp

- High school counselors
- Hard copy flyers mailed and/or posted on high school campuses
- Targeted emails to past students, faculty, and participating high schools
- Targeted emails to all district high schools (principals, teachers, counselors, etc.)
- CARCAM website: www.CARCAM.org
- Community college website announcements and links
- High school website announcements and links

- Announcements at high school-related activities during the academic year (e.g., career days, fairs, college awareness events, etc.)
- Where available, career coaches advertise at high schools, and distribute and collect camp applications

PLANNING CALENDAR AND CHECKLIST

Timeline for Summer Camp

6 months in advance

- Schedule a planning meeting on campus
- Schedule summer camp dates and locations
- Create flyer and place information on website
- Schedule industry tours

3 months in advance

- Begin recruiting students
- Begin advertising

6 weeks in advance

- Create purchase orders for supplies and materials
- Schedule bus transportation

4 weeks in advance

- Recheck purchase orders
- Verify breakfast and lunch menus
- Confirm catering

2 weeks in advance

- Put together kits and student supplies
- Copy handouts and needed forms including agenda
- Verify transportation
- Confirm tours and remind company of your tour date with times and student numbers (may be required to provide the company a list of tour participants)
- Notify local press about camp (newspaper, television, radio)

1st day of camp

- Set up sign in sheets and adequately staff registration desk
- Students complete required forms including photo release form

- Pre-camp survey for evaluation purposes (brief)
- Separate students into teams or groups (if numbers sufficient)
- Play ice breaker/team building game to initiate communication
- Provide overview of camps weekly activities, etc.
- Provide backpack ("survival kit") to students
- Visit specific labs and programs, and start hands-on projects
- Assign faculty to videotape students during lab experiences and team building games
- Coordinate faculty and the press during their camp visit

Last day of camp

- Pick up projects students have been working on
- Set up student presentations—may have parents and family present
- Hand out post-camp survey
- View camp video (Informal/fun)
- Distribute certificates/awards/take-aways

1 week post camp

- Process W9 form for travel, stipend or needed student and/or faculty payments
- Pay purchase orders for food and supplies utilized during camp
- Send out video of camp with pictures, etc., if applicable to schools, counselors, youth groups, faith based organizations, etc.

COMMUNICATION AND OUTREACH

Communication Before the Camp

Various colleges in our region promote their unique summer camps in their own ways. For all involved however, once the camp venue, dates, faculty, and instructional activities are identified, the earliest forms of outreach information can be distributed to participating districts and high schools. A resource to obtain additional information may be found online. Refer back to the CARCAM and college websites often. Regular and frequent announcements about the camp opportunity, and where and how to register, is important. The main point is to have the information easily accessible for people to start seeing and responding to.

All of the relevant camp details (when, where, what, who, why, and how to sign up) need to be easy to find, easy to read, and easy to follow. (See sample marketing poster(s)/flyers in appendix) The flyers and announcements should be sent out and posted (hard copies) beginning in January or February of the camp year. Monthly or twice monthly email reminders, updates, Coming Soon announcements, newsletter or meeting announcements should be made, along with updates on corresponding online resources. You want to establish a communication pipeline with regularity, continuity, and reinforcement. This is the best way to market the STEM Camp opportunity, and to invite students to complete the application process. (See sample registration forms/flyers in appendix)

All application and registration materials should be kept secure and updated. Current participant lists, updated agendas for labs, classroom activities, and industry tours should be shared with camp team members on at least a monthly basis.

** Using a shared website for current information is very efficient. Anyone involved with the planning and communication can go to the website for the latest information, updates, and any changes.*

Communication During the Camp

Communication during the STEM Camp is handled on a real-time, daily basis. The camp coordinator is a good focal person during the camp week. As the camp launches (first day), students will turn in their completed Participant Release, Pre-camp Survey, and other forms (e.g., health form, rules of conduct form, photo release form) as required. The sign-in sheet is usually in the "Welcome meeting room" location where breakfast is served and beginning announcements for the day are made. These announcements can also be printed out on colored paper and handed to each student as appropriate (e.g., where a substitution of activity is made, or some description they need for that day made available).

Camp faculty members may be asked to take attendance in each of their labs or classroom sessions for each day of the camp. Or, if students are divided into groups their group leaders keep attendance. Accurate records are needed for determining stipends for perfect attendance and/or scholarship eligibility. The camp coordinator or leader (could be a faculty member, career specialist, or designated individual from the sponsoring college campus) will collect the attendance records. The camp coordinator will also ensure that all the participants are on the bus for plant tours and for returning.

Finally, during the concluding segment of the camp, feedback forms are distributed to the students. A pre-camp survey completed the first day of camp in the a.m. is completed as well as a post-survey completed at the end of the last day of camp. Students watch a video of themselves taken during the camp. Some camps have the student teams prepare a presentation about a specific topic or about their camp experience. This is presented on the last day of camp, sometimes

with parents and family members present, before certificates are awarded. On the last day, students are advised about possible follow up activities available to them in person or online.

Communication <u>After</u> the Camp

There may be a few follow up communications (e.g., regarding students who didn't receive their certificate or a copy of the camp video; those who need to turn in forms; the payout of the stipend for perfect attendance). These follow up communications, and any others deemed important to the success of the program (e.g., external evaluation), should reference the camp they attended and will contain specific instructions where applicable.

As for faculty and industry participants, a sincere "Thank You" letter is highly recommended. Acknowledging their contribution and service to the program is appreciated. To the degree possible, the communication should be personalized by mentioning the demonstration, activity, or specific tour. The complete list of student participants, faculty participants, and industry participants for a given camp year, should be retained and used for recruitment for the following year.

PROMISING PRACTICES

STEM camps impact the lives and career pathways of students who attend.

Here is the story of one of our students:

I was raised in Bremen, Alabama which is a rural town (no mayor, no police, no traffic lights, etc.) in Cullman County, AL. The employment prospects within my hometown are almost nonexistent. I was referred to the NSF/ATE funded STEM Camp at a CARCAM college in Hanceville, AL by the principal at my High School. He said that he had heard good things about the camp in the summer of 2008. We were introduced to areas of applied math and science and career fields that used these skills. I was very interested in the Automotive Manufacturing career and undecided to attend college in the Fall of 2009. In my last semester of school, an opportunity presented itself for me to begin working as a maintenance technician at a local Tier 1 automotive supplier, Cullman Yutaka. I have learned a lot at school that prepared me well as an entry-level technician, but there is a lot more to learn. I appreciate the opportunity to have gone through this program and look forward to a career as an automotive manufacturing maintenance technician.

Purpose

- Be clear about your mission to connect high school students to technical summer programming
- Keep the content and flow of the camps FUN, engaging, and learner-centric
- Keep a positive and forward-looking attitude and theme (i.e., the students' futures!)

Preparation

- Be clear and consistent with your outreach communications
- Keep the application and selection process manageable and meaningful
- Remind students, faculty, and industry participants what to expect and fulfill those expectations

Parental Participation

- Include parents, families, and care givers to the degree possible
- Be patient and realize this may be a new learning experience for them, too
- Allow parents to acknowledge and share in their student's achievements by inviting parents to the last day of camp to see presentations and the handing out of certificates

Practical Practices

- Use this guide as a resource and/or build on previous years' successes
- Keep the content and flow of the camps engaging and learner-centric
- When in doubt, streamline and simplify. If something is convoluted, straighten it out!

Follow up

- Be sure to connect with all participants (students, faculty, industry) within 1-2 weeks after the camp
- Thank everyone for their participation
- Hold a "Best Practices" meeting to share what worked well, what did not, as well as new ideas for next year's camps

Performance and Impacts

- Use the pre- and post-surveys to capture performance and impacts of student engagement with program
- Use feedback/evaluation for continual improvement processes
- Keep a positive and forward-looking attitude when monitoring and measuring impacts (what can we learn from this year's camp and what does it tell us about offering and even better camp next year

Intended Outcomes

- Capture the gains in students' awareness of, interest in, and experience with STEM concepts as a result of the camp involvement
- Note where the greatest student (participant) energy and excitement is during the camp
- Increase employer awareness of college programs and involvement in campus initiatives

Unintended Outcomes

- Past students are the best promotion for future camp participants (they tell their peers, their siblings, their neighbors, etc.)
- Summer camp participants may have a renewed sense of pride and purpose for their high school studies and/or a clearer sense of continuing their education post-secondary (they become enthusiastic and more "college-aware/college-ready" due to the camp exposure) and seeking future career opportunities
- Increase community awareness of the college and its programs

Summary Recommendation and Key Advice:
Make this learning experience fun for the students and they will graduate from camp with a positive, informed outlook about their potential college and career opportunities.

ADDITIONAL HELPFUL HINTS

Media Resources

If there are websites, links, books, kits, or other pertinent sources of complementary or supplemental information available to STEM Camp participants, these should be made available through electronic or hard copy lists. Sometimes there are additional campus, community, or industry events to remind students to take advantage of after the camp ends.

Take Aways

Students love to have something to show and tell from their camp experience. Whether the take aways are from the college itself, the industry tours, or their faculty from the lab or classroom instruction, the students welcome something to have as a reminder of their camp experiences. The take away can be small and inexpensive, but perhaps includes the name of the college or industry organization that was involved in their camp. These tokens are often prized and kept as a reminder of their exposure and achievement. Examples of successful take aways include pens, markers, magnets, notepads with logos, bags with logos, technical gadgets with logos, desk top items, etc. Prizes for camp contests, challenges, competitions, and drawings are also very popular. Industry partners may be able to donate a more significant prize for the end of the camp drawing.

Trips and Tours

The most successful field trips and industry tours are those that engage the students through active or interactive demonstrations. The students like to be able to see the actual setting, equipment, and work processes involved in a technical field. They also enjoy ample opportunity to ask questions with business and industry representatives while on the tour. The glimpses into the workings of technology organizations often prove among the most memorable of the camp experiences for the students. These outings bring to life the STEM information and instruction they receive in the labs and classrooms.

Food and Beverages

Students look forward to the special accommodations of a light breakfast, lunch, snacks, and/or beverages provided as part of their summer camp experience on a college campus. Bottled water is a staple for the camps. The menu should not be overly complicated. The most straightforward service and presentation (buffet line, bag lunches) are the best. Popular past menu items include: sandwiches, pizza, and barbeque lunches.

Appendix

******The following pages contain samples of icebreaker activities, lesson plans, worksheets, camp applications, camp flyers, photo releases, pre- and post-surveys, certificates, etc.******

CLASSROOM TEACHING MATERIALS

Sample Lesson Plan

Title: Name of Activity in a Given Lab Session

Time: Range of Time, e.g., 1-3 hours or designated days of the camp week)

Objectives: 1-2 basic learning objectives for students participating

Standards: Do any apply from industry or state education for the camp lab activities?

Materials: What do students need for the activity*?*

Lesson Outline: Summary or high-level details of activity sequence

Sample Math Work Sheet

1) I have a concrete driveway to pour. The driveway is to be 275 feet long and 9 feet wide. I want it poured 6 inches thick. Concrete costs $92.00 per yard and there is 4% tax.
   How many yards of concrete will I need?
   How much will it cost?
2) A student weighs 175 pounds. She is sitting on a 4' x 8' sheet of plywood that weighs 35 pounds.
   What amount of pressure will it require to lift the student and plywood off of the floor?
3) A hydraulic cylinder is to be used to lift a truck. The truck weighs 4000 lbs. The pressure available is 120 psi.
   What diameter of a cylinder is needed to lift the truck?
4) A robot is capable of moving at 1500 mm per second.
   How many inches per second is this?
   How many miles per hour?
5) A car is traveling at 65 mph.
   How long does it take for it to travel 100 yards?
6) A cylindrical tank measures 4 feet in diameter and 10 feet tall.
   How many gallons will the tank hold? (1 ft^3 equals 7.481 gal)

Sample Topics and Demonstrations

Examples of items produced in the lab setting during camp:

- CAD 3D printer project
- Build a robot
- Soldering project
- Machine tool/welding – car name plates

Sample Tours for STEM Camp

Examples of past tours include:

- Original Equipment Manufacturers (OEMs)
- Suppliers
- Power company
- Robotics center
- Local technology companies
- College campus tours

TrenholmState

H. Councill Trenholm State Technical College

STEM Camp 2012

Trenholm State Technical College will hold its 7th Annual Science, Technology, Engineering, and Mathematics (STEM) Camp June 18-22, 2012. Twelve high school students currently enrolled in the 10th and 11th grade will be selected to attend the STEM Camp which is designed to provide academic enrichment activities in science, technology, engineering, and math. Students will receive $40 per day and a travel allowance.

Selection Criteria:

1. *Student must be currently enrolled in the 10th or 11th grade.*
2. *Student must have a 2.5 or higher cumulative GPA.*
3. *A completed application packet must be received by 11:00 a.m., April 20, 2012.*

The application packet must include the following:

- *STEM Camp 2012 Application*
- *Official high school transcript report*
- *A type-written one-page Resume' (in Standard Resume format)*
- *A two page essay entitled,* **"How does STEM apply to one of the following fields: Automotive Manufacturing Technology, Machine Tool Technology, or Automotive Service Technology? How does this field relate to your career goals?"** *(The essay must be typed, double spaced using a 12-point type, and 1.5 inch margins). Emailed to: cmillender@trenholmstate.edu*
- *Letter of recommendation from a principal, counselor, or teacher from the STEM discipline*

Only first-time applicants will be selected for participation in STEM Camp 2012.

Submit Applications to Trenholm State Technical College, ATTN: Carolyn Millender, P.O. Box 10048, Montgomery, AL 36108
LEC Center, Bldg. J, Rm. 103, Patterson Campus
no later than 11:00 a.m., April 20, 2012.

LOOKING FOR SOMETHING TO DO THIS SUMMER?

Attend A FREE Camp!

SCIENCE TECHNOLOGY ENGINEERING MATH CAMP 2011

June 20-24: Co-ed camp

9:00 a.m. - 3:00 p.m.

Jefferson State COMMUNITY COLLEGE

www.jeffstateonline.com

CARCAM Consortium for Alabama Regional Center for Automotive Manufacturing

NSF

Jefferson State follows equal opportunity admission policies and employment practices. College facilities are accessible to the handicapped.

This program is funded through a grant from the National Science Foundation.

Interested in Science, Technology, Engineering and Math?

This Five-Day Camp Is For You!

What Explore exciting careers in robotics, manufacturing, automotive technology, and many more. Hear from business leaders about what they look for in potential employees and the types of jobs they have available. Tour an Alabama manufacturing plant.

Who Students entering the 10th, 11th, or 12th grade in Fall 2011 with an interest in pursuing a career in science, technology, engineering, or math.

Where Jefferson State Community College
Manufacturing and Technology Center
2601 Carson Road
Birmingham, AL 35215

Cost THE CAMP IS **FREE**! The National Science Foundation has awarded Jefferson State Community College a grant which pays for the STEM camps and provides a stipend of **$100.00** for students who complete the camp.

To Register and for More Information

Application can be found online at **www.jeffstateonline.com** or get a hard copy by calling (205) 856-7848 or (205) 856-7701. Return completed packet postmarked by April 11, 2011 or hand-delivered by 4:00 pm on April 11, 2011 to Jefferson State Jefferson Campus, Manufacturing & Technology Center, Room 236, 2601 Carson Road, Birmingham, AL NO FAXES ACCEPTED

STEM CAMP Application

STUDENT INFORMATION

Name: _____
Last Name First Name Middle Initial

Mailing Address: _____
Number and Street City State Zip Code

Home Phone Number: _____ **Cell Phone:** _____

E-Mail Address: _____

SSN (Required for payment): _____

Gender ○ Male ○ Female **Do you currently qualify for free or reduced meals?** ○ Yes ○ No

Race/Ethnic Category: ○White ○Black ○Hispanic ○Asian/Pacific Islander ○American Indian/Alaskan Native

Have you previously participated in a CARCAM Stem Camp? ○ **Yes** ○ **No**

Math Grade (Algebra or higher) _____ **Grade for school year 2011-2012**: ○10th ○11th ○12th
(Math Grade of Algebra or higher must show on submitted Transcript or report card)

EMERGENCY CONTACT INFORMATION

Name:_____ **Relationship:**_____

Address:_____

Cell phone:_____ **Work phone:**_____

In a short essay (1 page), describe your career goals and how certain you are of these goals. If you are unsure of your career choice, describe things that are of interest to you. Please type and attach as a separate sheet.

REFERRING COUNSELOR, PRINCIPAL, OR TEACHER INFORMATION

Name: _____ **Subject:** _____

School: _____ **Phone Number:** _____

E-Mail Address: _____

By signing below, I am recommending the above named student to participate in the Jefferson State Science, Technology, Engineering, and Math (STEM) Camp. I have also verified the student information for accuracy.

_____
Signature

Return this form along with your career goals essay and transcript or report card to Jefferson State Community College, Manufacturing and Technology Center, Attn: Pat McConnell, 2601 Carson Road, Birmingham, AL 35215. Application materials must be postmarked by April 11, 2011 or hand-delivered by 4:00 p.m. on April 11, 2011. NO FAXES ACCEPTED Only completed application packets (fill in all blanks) received by deadline will be considered. Application packets will be accepted via U.S. Postal Service or hand delivery to Jefferson Campus, Manufacturing and Technology Center, Room 236.

This program is funded through a grant from the National Science Foundation

PRE-STEM CAMP SURVEY

Dates of Camp _____

Your School	Grade completed	Gender	Ethnic Background	College/Location of this CAMP

Have you previously attended a STEM CAMP? [ ] Yes [ ] No

What do you expect to change for you as a result of attending STEM CAMP?

Please check the courses below that you have taken and completed in high school.

[ ] Physics [ ] Chemistry [ ] Geology [ ] Biology

[ ] Algebra 1 [ ] Algebra 2 [ ] Trig [ ] Geometry

[ ] Electronics [ ] Auto tech [ ] Drafting [ ] Electrical [ ] Computer

Item		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
I plan to attend a 4-year college directly after high school.						
I plan to attend a technical or community college after high school.						
It is very important to me that I go to work as soon as possible.						
I can make a good living working in manufacturing.						
I prefer "hands-on" learning to sitting in a lecture.						
I believe good jobs today require more science and math knowledge.						

POST-STEM CAMP SURVEY

Dates of Camp _____

Your School	Grade Completed	Gender	Ethnic Background	College/Location of this CAMP

Statements Regarding Your STEM Camp Experience		Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
The activities stimulated my curiosity about technology						
I will be able to use what I learned in camp						
I liked the way the camp sessions were presented						
The STEM activities were a good way for me to learn						
STEM CAMP activities were relevant to my career goals						
Camp teachers cared about me as a student						
I learned things at camp I didn't know before						
I would be more likely to consider a technology career such as manufacturing because of what I learned at STEM CAMP						
I understand more about technical education at community colleges as a result of attending STEM CAMP						
The activities held my attention						
STEM CAMP made learning fun						
I had an opportunity to learn in teams with other students						
I learned something about manufacturing from the Industry Tour in which I participated						
I feel better able to make an informed career decision as a result of attending this camp						
I would recommend STEM CAMPS to a friend						

In what technical class, e.g., welding, electronics, etc …, did you learn the most and why?

=

IMAGE RELEASE CONSENT FORM

As part of this STEM camp we take photographs and videos of students in action as they participate in the classrooms, field trips, workshops, labs, etc.

We would like you to indicate below what uses of images of your child you are willing to consent to. This is completely up to you. We will only use the photographs, video, and images in ways that you agree to. In any use of these images, names and other personal information (name, age, etc) will **NOT** be identified, unless first discussed with the parents

- ☐ Images of my child(ren) may be used as part of _____ (name of organization), brochures, pamphlets, websites.
- ☐ Images of my child(ren) may be used for newspaper and other media advertising the STEM camps.
- ☐ List here other specific ways in which your organization might use images, names, etc.
- ☐ Please **do not** use ANY images of my child(ren) in ANY way.

I have read the above description and give my consent for the use of the images as indicated above.

_____

Child(ren)'s name(s): (please print)

_____

Parent/Guardian Signature *Parent/Guardian Name (please print)* *Date*

CARCAM STEM CAMP STATISTICS - SAMPLE

Name of College_____

Date(s) of Camps _____

Attendees:							
	Male	**Female**					Comments
Camp 1							
Camp 2							
Camp 1							
Camp 2							

Ethnic Origin:							
	Black	White	Asian	Hawaiian	Native American	Other	Comments
Camp 1	10						
Camp 2	9						

List Technical Programs Visited:
1.) INDUSTRIAL MAINTENANCE AND MACHINE TOOL
2.) WELDING AND INDUSTRIAL ELECTRICTY
3.) AUTOMOTIVE TECHNOLOGY AND AUTOMOTIVE COLLISION REPAIR
4.) DRAFTING AND GRAPHIC DESIGN
5.) COMPUTER INFORMATION SYSTEMS
List Industry Tours:
ALABAMA NATIONAL GUARD 187TH FIGHTER WING, MONTGOMERY ALABAMA
Survey Statistics: (May attach information)
Camp 1
Camp 2
PLEASE ATTACH CAMP FLYER (if used for recruitment)

21st Century Advanced Technology Summer Academy
Statement of General Terms & Conditions

1. Attendance

Students are expected to attend all academies for which they are registered. Students are expected to be on time and ready to work. Students who are unable to attend the academy should call in advance. The seating in the academies are limited and seats should only be reserved for attending students.

2. Permission to Travel

The student's name listed below has my permission to participate in the above college sponsored trip on and off campus extracurricular activities. I understand it is my responsibility as a parent/guardian to provide the college with emergency information.

3. Photography Release

I understand that as a participant, my child may be photographed or videotaped during the 21st Century Advanced Technology Summer Academy. I grant permission for these photographs and/or videos to be used in promotional materials developed by the college.

4. Student's Safety Requirements

I will use common sense. I will not clown around or horseplay in the lab. I will always consider an electric circuit to be "live". I will remove all jewelry and items from shirt pockets before working on any electrical or electronic equipment. I will not work on wet floors. I will keep my work bench organized and neat. When working on circuit with power applied, I will work with one hand behind my back. I will make certain that no part of the body is in contact with a grounded surface. I will pay attention to the work at hand and will not distract someone else while working on live equipment. I will allow hot electrical components to cool before touching them. I will only use the proper tool for the job. I will learn the location of First Aid equipment and supplies in the area in which I will be working. In case of doubt, I will consult someone with knowledge of the situation. I will not eat food, or drink, when working on equipment. I will not turn on or tamper with equipment until I am fully checked out on its operation. I will learn the location of all fire. I will report any equipment malfunction to the instructor. I will report any accident (no matter how minor) to the instructor immediately.

The signing of this form below indicates that I have read this document and am satisfied that I understand its content and accept that I am entering into an agreement with Lawson State Community College. If I do not abide by all rules and requirements, I am aware that I will be asked to leave the academy.

Student Signature	Parent/Guardian Signature	Work Number
Student Print Name	Parent/Guardian Print Name	Home Number
Date	Date	Cell Number

Student Search

Has ridden on an airplane. (1 point)	Likes to eat french fries. (1 point)	Is wearing pink. (1 point)	Went to a different school last year. (1 point)	Has one sister. (1 point)
Wears glasses. (1 point)	Likes to eat pizza. (1 point)	Has four letters in his/her first name. (1 point)	Has a last name that starts with an S. (1 point)	Has on blue. (1 point)
Rides a school bus. (2 point)	Likes to read. (2 point)	Knows what 4+9 is. (2 point)	Has a dog. (2 point)	Has brown hair. (2 point)
Has a brother. (3 point)	Rides a school bus. (3 point)	Has been to the zoo. (3 point)	Has more than six letters in his or her first name. (3 point)	Packed his or her lunch today. (3 point)

What is your favorite car manufacturer that is located in the state of Alabama?

When your teacher tells you time is up, count your points. How many total points do you have? _____

CERTIFICATE OF PARTICIPATION

Presented to:

(Insert Name Here)

of

(Insert School Name Here)

For Participation In

STEM Camp (year)

(Insert Location Here)

(Insert Date Here)

(Insert Name of Official Here)

Date

(Title 1)

(Title 2)