

Case Study

The following case study is intended to provide you with a basic understanding of the procedure followed within the Samuel Ginn College of Engineering to establish a new student contest/project team to participate in a national/regional competition. The project introduced in the case study does not represent an existing project. Faculty/staff advisors can use the approach to learn how to start a new competition team. Although the case study discusses a simple project, it still provides a sample method to approach the College's administration for a new student team. The faculty/staff advisor of a new team needs to check for approval of his/her team and for a comprehensive procedure to proceed with the competition.

On a quiet summer morning at Auburn University, Dr. Jerry Davis, a faculty member in the department of Industrial & Systems Engineering, walks to his office in Dunstan Hall. On his way to the office, which is located on the third floor, he stops by the mail room to check his mailbox. Suddenly, he stops in the middle of the hall way to take a closer look at a small orange flyer from his favorite conference; Applied Ergonomics. The flyer is about the latest upcoming events at the 10th Annual Applied Ergonomics Conference between the 11th and 15th of March (2007) in Dallas, Texas. One of the headlines on the flyer reads:



The flyer features two logos at the top. On the left is the Auburn Engineers logo, which includes a map of the United States and the text 'Auburn Engineers Applied Ergonomics' and 'We Make The World Work Better!'. On the right is the Applied Ergonomics logo, which consists of a series of orange dots forming an arch over the text 'applied ergonomics conference 2007 Practitioners talking with practitioners'.

Auburn Engineers Ergonomics Student Design Competition

At the

10th Annual Applied Ergonomics Conference

Presented by

Institute of Industrial Engineers

Sponsored by

Auburn Engineers, Inc.

The description of the headline reads *“This new competition is a unique opportunity for graduate level students to assess, design, and present their solutions to a challenging problem in ergonomics. The competition is presented by IIE, sponsored by Auburn Engineers, Inc., and enthusiastically supported by the Applied Ergonomics community.”*

Dr. Davis returns to his office to further pursue the exciting news about the competition. Dr. Davis posts his “do not disturb” sign to spend some quality time reviewing the announcement. After thinking it over, and reviewing with some colleagues and students, he feels this would be a great opportunity to have his students compete against other teams in a National event. As a result, he first divides the life of his new project into 4 stages, those being;

1. **Initial Project Approval.**
2. **Operational Stage.**
3. **Participation Stage.**
4. **Follow up & Renewal Stage.**

Dr. Davis starts with thoroughly studying and understanding all the details of the competition found on the Conference Web site. He jots down his thoughts to discuss with his department head. After obtaining initial commitment from his department head, and 5 team members (4 primaries and 1 alternate) that they will participate in the project, contingent upon final approval and funding, Dr. Davis visits the [Samuel Ginn College of Engineering Student Team Competition Resource Web site](#). On this Web site, he finds all the resources necessary to put the process in motion. Generally speaking, the process works in the following manner during the initial stage:

Initial Project Approval

- 1. The faculty/staff advisor must fully understand and study the requirements for the new competition.**
- 2. The faculty/staff advisor must discuss the idea with, and get the initial approval of, his/her department head.**
- 3. The advisor must complete and submit, through his/her department, the [Request for Student Team Competition Form](#) to the Associate Dean of Engineering, who is responsible for all such events within the College. This includes details on:
 - 3.1 Space to host the team.**
 - 3.2 Budget and sponsor(s) [includes a budget for safety].**
 - 3.3 Activities, operations, and materials.**
 - 3.3.1 Describe, in detail, all operations and machinery.**
 - 3.3.2 Inform [RMS](#) of all materials, operations and equipment used in the competition.**
 - 3.4 Number of team members (students) and basic responsibilities.****
- 4. The [College Safety Engineer](#) must inform all University and College departments and offices involved, directly or indirectly, in the competition. This can be accomplished electronically by reviewing item #7 ([Useful Links to University Departments and Offices](#)) of this Program for a list of departments and offices that are involved in competition teams.**
- 5. The faculty/staff advisor must publicly announce for the new engineering student competition team.**
- 6. The faculty/staff advisor will recruit students and assign responsibilities.**

Dr. Davis carefully reads the requirements for the initial project approval and downloads the following:

1. [Request for Student Competition Form](#), and
2. [Useful Links to Departments and Offices at Auburn University](#).

He realizes that he has fulfilled the first 2 requirements on the initial project approval list, and he still needs the other 5 requirements. Therefore, he fills out the two forms and contacted University offices and departments as follows.

Request for Student Team Competition Form

Auburn University

Samuel Ginn College of Engineering

Department: ISE **Date:** 08/26/2006

Advisor: Dr. Jerry Davis **Team Name:** ERGOnaut's (07)

- **General nature of the project:** a team comprised of undergraduate and graduate ISE students desire to participate in a two-stage competition, which involves students in ergonomics and safety to solve industrial case studies.
- **Location and Dates:** Dallas, Texas. March 11 – 15, 2007 (inclusive of travel).
- **Method of Traveling:** Rental Van.
- **Estimated Project Budget:** \$4,000
 - **Advisor Funding:** 100% 75% 50% 25% None
 - **Estimated Amount:** \$0
 - **Department Funding:** 100% 75% 50% 25% None
 - **Estimated Amount:** \$1,000
 - **Sponsor(s) Funding:** 100% 75% 50% 25% None
 - **Estimated Amount:** \$2,000
 - **Potential Sponsor(s):** Industrial organizations, ergonomic equipment manufacturers, government and state agencies, and private contributors.
 - **College Funding:** \$1,000 (if requesting more that 25% of project funding from the COE, you must fill out and submit the [Student Competition Team Budget Worksheet](#).)
- **Assistance with Sponsors:** Do you require assistance from the College staff to identify, contact, and work with potential project sponsor(s)? Yes No
- **Space Requirements:** We need access to the Shop Buildings to fabricate a prototype that we can transport to the competition. Additionally, we will require

approximately 25 sq. ft. of floor space to store the prototype and materials from December 1st, 2006 to April 30th, 2007.

- **Number of Students involved:** (For assistance with recruiting announcement, please contact the [Office of Communications and Marketing](#))
 - **Undergraduate Students:** 2
 - **Graduate Students:** 3 students (2 Master's and 1 Doctoral)

- **Students Responsibilities:** (briefly describe your students responsibilities, be as specific as possible)
 - **Undergraduate Students:**
 - Responsibility 1
 - Responsibility 2
 - **Graduate Students**
 - Responsibility 1
 - Responsibility 2

- **Activities, Operations, and Materials:** (In this section, please provide detailed descriptions of all activities, operations, and equipment in your project. The [Samuel Ginn College of Engineering Student Team Competition resource Web site](#) provides the [Processes, Equipment, and Materials Form](#) to assist you filling out this section. For further assistance in identifying processes, equipment, and materials, please contact [RMS](#) and the [Engineering Shop Buildings Office](#) which can be found in the [Useful Links to Departments and Offices at Auburn University](#).

Dr. Davis contacts [RMS](#) and the [Engineering Shop Buildings Office](#) to seek assistance in identifying processes, equipment, and materials that are required for his new project. He comes up with the following processes that are necessary to build the prototype:

- Metal forming, cutting, and shaping.
- Hot work (including welding).

- Installation and wiring of an electric motor.
- Priming and painting.

Dr. Davis pays a visit to the [Engineering Shop Buildings Office](#) to take a closer look at the shops' capabilities in terms of machines, processes, and equipment in order to finalize his [Request for Student Team Competition Form](#).

Early Friday morning, he steps in his office with the intention to submit his project proposal ([Request for Student Team Competition Form](#)) to his department head and then to the Associate Dean, hoping he hears back within a week or so. The final step for Dr. Davis before submitting for [Project Initial Approval](#) is to review his procedure by filling out the [Initial Stage](#) of the [New Project Check list](#) posted on the [Samuel Ginn College of Engineering Student Team Competition resource Web site](#).

Project Stage		Yes	No
1.	Initial Stage		
1.1	Study and understand the announcement.	✓	
1.1	Discuss the idea with your department head.	✓	
1.2	Get the Dean's initial approval.	✓	
1.3	Inform all University departments involved in the competition.	✓	
	1.3.1 The Engineering Student Organizations Office		
	1.3.2 Risk Management & Safety		
1.4	Develop a comprehensive proposal for the competition team.		
	1.4.1 Space to host the team,		
	1.4.2 Budget and sponsor(s) [including a budget for safety],		
	1.4.3 Activities, operations, & materials, and		
	1.4.3.1 Describe all operations and machinery involved.		
	1.4.3.2 Inform RMS of materials, operations, & equipment.		
	1.4.4 Number of students and their responsibilities.		
1.5	Publicly announce for a new eng. student competition team.		
1.6	Recruit students and assign responsibilities.		

Having submitted the proposal along with a copy of the contest announcement and regulations to his department head and then to the Associate Dean, Dr. Davis waits for word on the status of permission and requested project funding. The Associate Dean will review the request and forwarded the documentation to the [College Safety Engineer](#) and [Oversight Committee](#) (if required), which will evaluate the project in terms of safety issues and associated risks.

Approximately 3 days later, Dr. Davis receives an e-mail from the Associate Dean stating that the College has tentatively agreed to support the project in the amount of \$1,000 and has arranged for COE staff to assist the Advisor in raising the remaining funds from potential sponsor(s). The e-mail further states that use of the requested shop facilities is granted and a temporary storage area will be created and assigned to the project.

The following week, Dr. Davis receives an email from the [Oversight Committee](#) asking him to provide more information about the nature of his project, processes, equipment, and materials that the team will use in the development and transportation of the prototype device to and from the competition site. The email reads:

“The entire concept of structuring the [College of Engineering Student Team Competition Program](#) is based on the merit to formalize and structure the process of applying for funding, evaluating associated risks, providing the necessary skills and services for the safe and mindful participation, and promotion of the entry of Samuel Ginn, College of Engineering students into Engineering Competition Team events.”

To simplify this request, Dr. Davis returns to the [Samuel Ginn College of Engineering Student Team Competition resource Web site](#) and reviews the [College of Engineering Program](#), particularly the titles in item #5 ([Administration](#)). He later consults with [RMS](#) team competition specialists to assist him with this request. Dr. Davis discusses the supporting materials for the [Oversight Committee](#) with his team members and submits them [online](#) after checking the appropriate boxes and providing short amplifying information about some of the specifics of constructing the prototype. At this time, Dr. Davis has completed the first stage of the lifetime of his project, namely the [Project Initial Approval](#) and it is time to move on to the operational stage.

- 1. Initial Project Approval.**
- 2. [Operational Stage](#).**
- 3. Participation Stage.**
- 4. Follow up & Renewal Stage.**

As Advisor, it is Dr. Davis' responsibility to ensure that members of his team have received the requisite basic training on equipment use, including shop safety, prior to allowing any actual manufacturing to occur on the project. It is also a requirement that proper supervision be provided by designated personnel from the [Engineering Shop Buildings Office](#) during actual project work. Assisting him in this area, the [Samuel Ginn College of Engineering Student Team Competition Resource Website](#) contains information on

1. [Basic Shop Skills and Requirements](#) prior to working on Student Projects,
2. [Basic Safety Training Requirements](#) on safety related issues associated with participating in student team projects, and
3. [Advanced Training Requirements](#) targeted to specific individuals involved in certain critical projects activities. The [Program](#) also contains [Administrative Guidelines](#) on transportation.

Dr. Davis addresses all three requirements with his team members as follows

“Prior to being ‘turned loose’ in the College Engineering Shop buildings and Labs to commence actual work on a prototype or project, you must satisfactorily demonstrate to the [Engineering Shop Buildings Office](#) that you have the appropriate background, training, skill, and maturity to operate specific equipment or processes.” He also added that *“This is not meant to be punitive in nature, but rather to ensure that those of you who are operate such equipment have demonstrated that you are capable of doing so safely, efficiently, and accurately.”*

Dr. Davis supports on his comment by reading to his students from the [Program](#).

“The Associate Dean is charged with developing and implementing this [Program](#). Therefore, resources to ensure that the students have adequate technical shop skills to perform the tasks required for the competition projects are provided. You can find such resources in the [Basic Shop Skills and Requirements](#) link at the [Engineering Shop Buildings Office Website](#).”

Dr. Davis realizes that the nature of the competition and associated risks obviously dictates what involvement students will have with what processes, equipment, testing, operation, and travel agendas. Hence, the safety related training that will be required for a particular team, is a function of these items. As a result, Dr. Davis contacts [RMS](#) to arrange for a full safety review of the project before starting the [Operational Stage](#). The following are essential steps during the [Operational Stage](#).

In order to assist competition teams and advisors in this effort, the College and RMS have established training modules for [Basic Safety Training Requirements](#) in [WebCT™](#) to more fully understand safety related issues associated with participating in such student team projects.

Operational Stage

- 1. The faculty/staff advisor must arrange with [RMS](#) for a full review of all safety related issues for the new project.**
- 2. A [Safety Training Matrix](#) contains all required training materials developed for the team.**
- 3. The [College Safety Engineer](#) creates the [Basic Training Requirements for ERGOnaut's \(07\)](#).**
- 4. The faculty/staff advisor must coordinate with the Course Director (the [College Safety Engineer](#)) to:**
 - 4.1 Arrange for scheduling the training release and completion dates.**
 - 4.2 Maintain records of [Safety Training Completion Certificates](#) issued by the [College Safety Engineer](#).**
 - 4.3 Take appropriate [actions](#) to ensure that students complete all assignments in a timely manner, and prior to actual work commencing in a shop environment.**
- 5. The faculty/staff advisor must inform [RMS](#), the [College Safety Engineer](#), and the [Engineering Shop Buildings Office](#) of any changes to team members, processes, competition regulations, and materials.**
- 6. The faculty/staff advisor must arrange with both [RMS](#) and the [College Safety Engineer](#) before testing the prototype either on or off campus.**

After the training schedule begins, Dr. Davis contacts the [College Safety Engineer](#) to ensure that all students are making adequate progress towards completion of the training. Once the training schedule has been completed by all team members, Dr. Davis and his team members are ready to commence project work. The final step to finish the [Operational Stage](#) is to review his procedure by filling out the [Operational Stage](#) part of the [New Project Check list](#) posted on the [Samuel Ginn College of Engineering Student Team Competition Resource Web site](#).

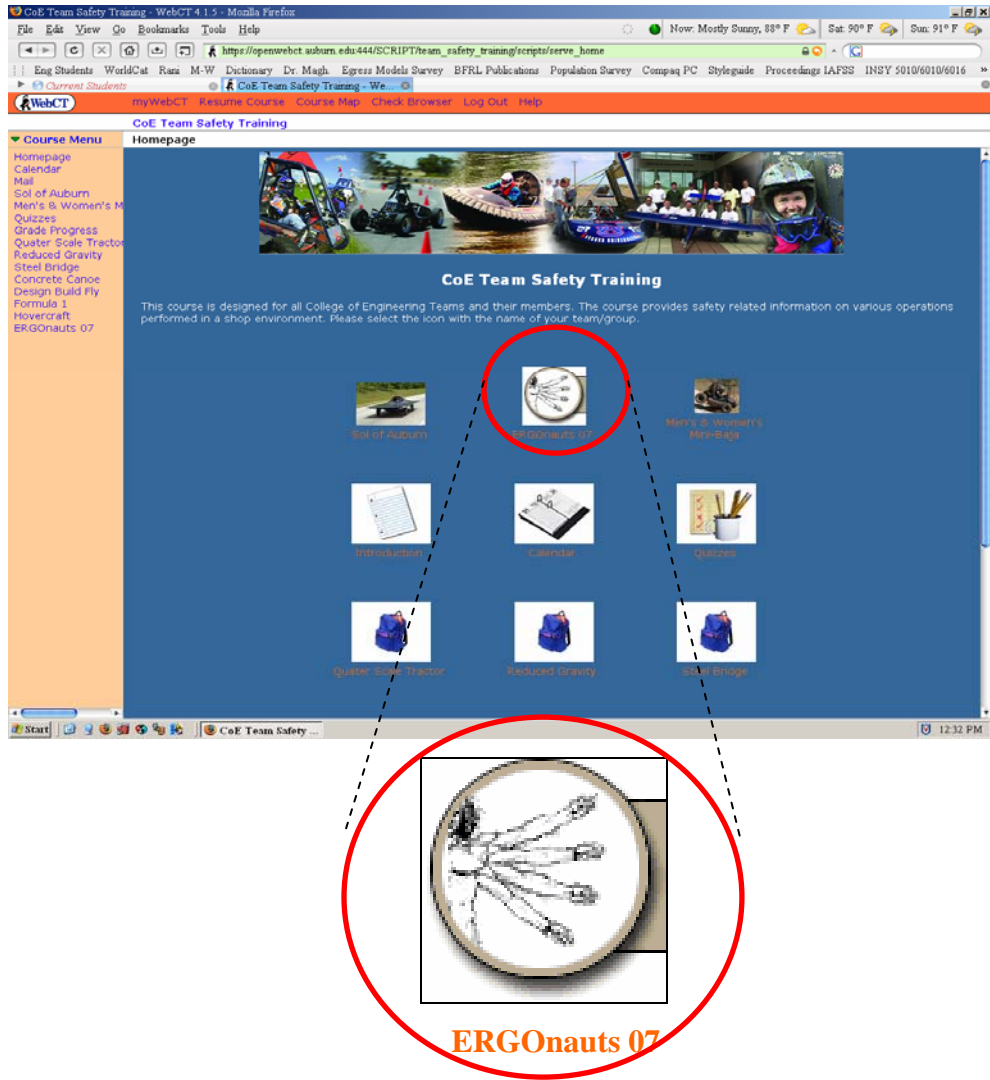
Project Stage		Yes	No
2.	Operational Stage		
2.1	Arrange with RMS for a full review of the project.		
2.2	Manage and administer training modules		
2.3	Administer regular safety inspection in arrangement with RMS.		
2.4	Emphasize on the importance of safety in team meetings.		
2.5	Maintain records of purchases, training, processes, and regulations.		
2.6	Inform RMS & College Safety Engineer of any updates in the project.		
2.7	Arrange with RMS & College Safety Engineer before testing prototypes.		

Let's look back with Dr. Davis as he enters the [Basic Safety Training Requirements on WebCT](#).

Basic Safety Training Requirements on WebCT

Auburn University

Samuel Ginn College of Engineering



The ERGOonaut's (07) team has been formed, permission and funding approved, shop and safety training completed, preliminary planning work and engineering complete, and they are ready to start building the prototype. Dr. Davis and the ERGOonaut's new Team Captain routinely remind the team members to follow a few basic rules, such as:

Basic Safety Rules in the Workplace

- **Follow all shop safety rules.**
- **Personal Protective Equipment (PPE) must be worn at all times.**
- **Eating, drinking, and smoking are only permitted in designated areas.**
- **No work permitted in the Shops unless supervised by the [Engineering Shop Buildings Office](#), faculty/staff advisor, or team captain.**
- **If working outside the Shop, never work alone, and always ensure that you have a working means to summon emergency responders.**

The ERGO_naut's (07) team proceeds on the prototype according to schedule, and the team comes to expect to see the [Engineering Shop Buildings Office](#), the [College Safety Engineer](#), and members of [RMS](#) staff routinely walking through the area, observing safety related behaviors, and asking if there is any assistance they can provide with safety related matters. This becomes the norm. Also, Dr. Davis occasionally asks some of these people to attend meetings or events to discuss specific safety related concerns or questions that might develop.

As the Advisor, Dr. Davis works in conjunction with the [College Safety Engineer](#) to ascertain what PPE is required for the project, sources for ordering the PPE, and general guidelines about replacing, maintaining, and turning in certain items of PPE to the College Safety Engineer at the conclusion of the project.

You may remember that the [Student Team Competition Budget Worksheet](#) required the Advisor to include 4% of the project budget, up to \$1,500 for safety related equipment and consumables. Some items may need to be turned-in to the COE Safety Engineer at the conclusion of the project.

- 1. Initial Project Approval.**
- 2. Operational Stage.**
- 3. [Testing and Participation Stage](#).**
- 4. Follow up & Renewal Stage.**

The testing and participation phase of some projects have their own unique and specific hazards and risks associated with them. In the case of the ERGO_naut's, there is

not much associated with testing the ergonomics lifting device developed. However, in other projects, especially the motor sport teams, testing and operating their vehicle can be one of the most hazardous events of the entire project. The faculty/staff advisor must work closely with the [College Safety Engineer](#), [RMS](#), and the [Oversight Committee](#) to ensure a sound, and safe plan of action is developed for testing prototypes.

Before you know it, it is March 11th, 2007 and it's time to pack up the team and travel to Dallas. As discussed, Dr. Davis plans on renting a Van from a local rental agency, and pulling a small box trailer that will contain the ergonomic lifting device, spare parts and tools, and extra luggage that won't fit into the Van. Obviously, a number of safety considerations must be thought out and planned for prior to proceeding on the trip. Dr. Davis reviews detailed guidance on associated issues on the [Transportation Guidelines for Student Teams Competition](#). Additional resources can be found on the [Traveling Module](#) of the [Basic Safety Training Requirements](#). Dr. Davis reviews his checklist for the [Testing and Participation Stage](#).

Project Stage		Yes	No
3.	Testing & Participation Stage		
3.1	Manage with RMS & College Safety Engineer to plan for the trip.		
3.2	Inform all participants of safety issues to traveling to an event.		
3.3	Enforce team adherence to traveling safety.		

“Bringing Home the Gold,” the team sings as they cross the Mississippi River heading to the Lone Star State. Well, in this case, it is the Silver! In any event, the contest is over, the return trip completed, and some final items need to occur, prior to officially dissolving the team.

- 1. Initial Project Approval.**
- 2. Operational Stage.**
- 3. Testing and Participation Stage.**
- 4. [Follow up & Renewal Stage.](#)**

The final responsibilities for Dr. Davis, or any advisor, include the following:

Follow up & Renewal Stage

- 1. Ensuring all team members file a travel claim report in a timely fashion.**
- 2. Turning in any College property including certain pieces of PPE to the College Safety Engineer.**
- 3. Filing the [Student Team Project Completion Form](#) with the Associate Dean.**
- 4. Review thoroughly all safety issues with [RMS](#) & [College Safety Engineer](#).**

Project Stage		Yes	No
4.	Follow up & Renewal Stage		
4.1	Report back to Associate Dean, department head, and sponsor(s).		
4.2	Report and discuss thoroughly with RMS all safety issues.		
4.3	Review safety performance during the competition with the team.		

At this point, Dr. Davis is through with the project, and it is time to start planning once again for next year's contest. He has learned a great deal about the process of how to take a student competition team from concept to fruition. He keeps his eyes on the Gold for next year, while sipping his coffee and going through his mail.

In order to initiate your next student team project, please click on the [Samuel Ginn College of Engineering Student Team Competition Resource Web site](#)