



2007 Thirteenth Annual SECME Regional Olympiad

Revised 3/24/07

Saturday, April 21st, 2007

**University of Florida
College of Engineering
Gainesville, Florida
INTRODUCTION**

The University of Florida College of Engineering and the Florida Alpha Chapter of Tau Beta Pi, The National Engineering Honor Society, are pleased to invite you to participate in the 2007 Twelfth Annual SECME Regional Olympiad to be held at the University of Florida in Gainesville, on **April 21st, 2007**. We are very excited about this year's competition. We will be holding the same events that your teams will see at the national competition, as well as other competitions your students will enjoy.

Our regional competition is intended to serve as a learning experience for each of your teams before they attend the national competition. Each event will be judged by engineering students and professors at the University of Florida. The judges will be available after each event to offer advice to the contestants to help improve their designs before the national competition arrives.

Included in this package are the comprehensive rules and guidelines for the 2007 SECME Regional Competition and the SECME National Competition. Please read the enclosed guidelines carefully, as certain rules may have been changed.

If you would like to have engineering students visit your school to help your teams prepare for SECME, please email secme2007@gmail.com. We look forward to your school's participation in the 2007 Thirteenth Annual SECME Regional Olympiad.

IMPORTANT DATES AND DEADLINES

Fri. April 6, 2007

Last date for **School Registration** forms to be postmarked and returned.

Fri. April 6, 2007

All essay entries must be received at the University of Florida to ensure that they can be judged, returned, and corrected before they must be turned in to the State Olympiad.

Fri. April 6, 2007

Last date for **Student Registration** forms to be postmarked and returned. *No teams will be accepted after this date.*

Fri. April 6, 2007

Last date to register team correction/substitutions. Any student not registered by this date *will not be allowed to participate.*

Sat. April 21, 2007

2007 Thirteenth Annual SECME Regional Olympiad

--All information, including school and student registration forms and student essays, MUST be completed and postmarked, faxed, or emailed to us by April 6, 2007. It is imperative that this deadline is met if we are to provide T-Shirts and food to the correct number of people.

CONTACT

Jonathan F.K. Earle

Associate Dean of Student Affairs

312 Weil Hall

P.O. Box 116550

Gainesville, FL 32611-6550

Tel: (352) 392-2177

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Email: jearl@eng.ufl.edu

Student Registration Forms

Student Registration Forms will be attached to the end of this document. Student Registration Forms, along with final team rosters, must be postmarked or faxed by **April 6, 2007**. No additional teams will be accepted beyond this date. In the event that a registered student cannot attend, a substitution can be made. However, a school is **not permitted** to increase the total number of students attending after **April 6, 2007**.

The College of Engineering expects that all coordinators will have in their possession emergency contact information for each attending student.

If any participating students have special needs, please notify the SECME Coordinator when submitting the Student Registration Forms.

GENERAL INSTRUCTIONS

To be eligible to compete at the 2007 Thirteenth Annual SECME Regional Olympiad, each school must be registered and in good standing with SECME headquarters in Atlanta. To be eligible to win the overall competition, a team must enter all of the following contests:

1. Banner Competition
2. Poster Competition
3. Essay Competition
4. Mousetrap Car Competition
5. Mathematics Examination

Since the goal of SECME is to encourage the development of mathematical and technical skills, we require all students to participate in the *Mathematics Examination*.

Each event will be divided into three categories: elementary school, middle school, and high school. Winners will be determined for each competition based on the rules and guide lines established in this booklet.

Elementary School students will only compete against other Elementary School Students.

Middle School students will only compete against other Middle School Students.

High School students will only compete against other High School Students.

For the 2007 Thirteenth Annual SECME Regional Olympiad, each school must comply with the following provisions: (Note: A team is not a school.)

- ❖ Each team must consist of three (3) members.
- ❖ Each Registered team must participate in all mandatory events.
- ❖ Each student may be in only one team.
- ❖ Teams of less than three (3) members will be allowed only if there are not enough people to form complete teams. Then a maximum of 1 two-member team per school will be allowed to enter. *–this revision simply states that each school MAY bring 1 two-member team if necessary (to keep those two people from being left out).*
- ❖ In fairness to the smaller schools, only the top three (3) scoring teams from each school will be used in the calculation of the overall winner.
- ❖ **No Substitutions between teams are permitted on the day of SECME.**

DESIGN PROJECTS (Mousetrap Car, Egg Drop, Wood Bridge, and Water Rocketry Competitions)

Each design project must be packaged separately and turned in at the time of check-in the morning of the competition. The packaging must protect each design from any damage that could occur during normal handling and transportation.

Each package must be clearly labeled with the following information:

- ❖ Team Name
- ❖ Names of Students on Team
- ❖ Coordinator Name
- ❖ School Name and Address

DESCRIPTION OF EVENTS

The rules relating to the Essay, Poster, and Mousetrap Car competitions can also be found at www.secme.org.

ESSAY COMPETITION – Elementary / Middle / High Schools; Mandatory

Each school is allowed to submit one (1) essay per **team**. The essay is to be based upon the theme as shown in the national rules. The essays must be received by **April 6th, 2007**. Submit one (1) copy of your entry to:

Jonathan F.K. Earle

Associate Dean of Student Affairs
312 Weil Hall
P.O. Box 116550
Gainesville, FL 32611-6550

POSTER COMPETITION – Elementary / Middle / High Schools

Each school may submit one (1) poster per **student**. **Students, with minor guidance from the teachers**, must construct a design/poster that encompasses the theme. Please see the appendix for guidelines. Note: at our competition, posters do not need to be in a poster frame. They **do**, however, need to be regulation size at the time of the competition, and matted with construction paper or other suitable “framing” material.

MOUSETRAP CAR COMPETITION – Middle / High Schools

Each team is allowed to enter one (1) Mousetrap Powered Car per team. This must be the team that the students have been with for the rest of the competition day. Switching teams or making substitutions will result in disqualification for the entire competition. Each entry must include the following to be eligible to place:

- ❖ Mousetrap Car – Fully constructed and must make at least one (1) run.
- ❖ One (1) set of technical drawings for the Mousetrap Car.
- ❖ Technical Report for the Mousetrap Car.

Please refer to the appendix for guidelines on constructing the Mousetrap Car.

BANNER COMPETITION – Elementary / Middle / High Schools; Mandatory

Each **school** is allowed one (1) banner entry. The guidelines included in this booklet should be followed. Each school banner will be displayed during the opening and closing ceremonies. Because of difficulty in hanging, we request that you do not put a pole on your banner. **The maximum banner size is 36” x 72”.** **Any banners that are larger will be disqualified.**

The banner will be judged on the following parameters:

1. Content
 - a. School Name (4 pts.)
 - b. School Colors (4 pts.)
 - c. City and State (4 pts.)
 - d. Current Year (4 pts.)
 - e. SECME Emblem (4 pts.)
 - f. Theme (5 pts.)
2. Originality (25 pts.)
3. Creativity (25 pts.)
4. Appearance (25 pts.)

MATHEMATICS COMPETITION – Elementary / Middle / High Schools; Mandatory

Each student attendee **MUST** participate in the mathematics examination. Students will compete in the math course in which they are currently enrolled. In the event they are not currently taking a math class, students must take the test for the math level they completed most recently. It is the school coordinator’s responsibility to insure the students are registered for the proper examination. Mathematics examinations shall be written in accordance to the Florida Sunshine Standards. All tests shall be scored by University of Florida SECME officials according to the number of questions answered correctly. In the event of a tie, the student who has the most correct questions in a row, beginning with question one (1) will have the “higher” score.

SPELLING COMPETITION – Elementary Schools

The spelling competition will be an orally administered and written response test. **Each team of three will be (grammar revision)** given an answer sheet and must agree upon one (1) answer for each spelling word. This must be the team that the students have been with for the rest of the competition day. Switching teams or making substitutions will result in disqualification for the entire competition. All tests shall be scored by University of Florida SECME officials according to the number of questions answered correctly. In the event of a tie, the team that has the most correct questions in a row, beginning with the first word will have the “higher” score.

Note: Answers should be written in all CAPITAL letters.

CEREBRAL CHALLENGE – Elementary / Middle / High Schools

Each school may enter teams of three (3) students. Questions will contain subject matter from the following areas: science, technology, engineering, and nature.

Cerebral Challenge Rules

Requirements: Each team must consist of three people. This must be the team that the students have been with for the rest of the competition day. Switching teams or making substitutions will result in disqualification for the entire competition.

Procedure:

- 1) All teams will answer every question on the screen by using the remote response system
- 2) There is no penalty for a wrong answer
- 3) Coaching **from anyone (grammar revision)** outside the team will disqualify the question and its points.
- 4) Challenges to a question should be brought to the attention of the staff at the end of the competition
- 5) The moderator will judge the accuracy of the response to each question. The moderator is the final judge of all challenges and scoring.

WATER ROCKETRY COMPETITION – Middle / High Schools

Each team is allowed to enter one (1) Water Rocket Vehicle per team. This must be the team that the students have been with for the rest of the competition day. Switching teams or making substitutions will result in disqualification for the entire competition. Students will design and manufacture a water rocket using a 2-Liter bottle as the pressure vessel.

Rules

1. A maximum number of 3 student members are allowed per team.
2. Each team is required to submit a completed entry form and water rocket prior to launch.
3. On the day of competition, but prior to launch, each actual operating rocket entry must pass a visual inspection and height requirement in order to be eligible to compete. Entries that fail inspection will be given ONE opportunity to make modifications to pass inspection, prior to the beginning of the rocket launching competition.
4. The pressure vessel must be one clear 2 liter bottle. (NO green bottles allowed for the pressure vessel.)
5. Water and air pressure are the sole sources of propellant.
6. **Do not use metal, glass, or spikes to construct the rocket. Use of these materials will automatically disqualify the team from the competition.**
7. **The tip of the rocket should be rounded or flat, like the bottle cap, approximately 1” across. –this revision simply clarifies that the tip must not come to a point, and we would like the rounded or flat edge to be about 1” across. This is to make sure the rocket will not become a dangerous projectile on its way down! (have no fear, we will be under a tent)**
8. The **objective** of the contest is for each team to launch a rocket propelled by water and air to reach as high as possible. The launch angle, which can be adjusted from approximately **45 – 60 degrees (again for our safety during the event)**, will be kept the same for all rockets launching during the competition. Each rocket will be launched using 12 ounces of water and at 60 psi of air pressure. **The “hang time” of the rocket is defined as the time from when the rocket leaves the launch pad until the time it reaches the ground.** This time will be measured by three independent judges, and the average time recorded will be used for the “hang time”.
9. The score for this competition will be normalized to the team with the longest hang time.

EGG DROP COMPETITION – Elementary School Only

Each school must submit one (1) Egg Drop Project per team. This must be the team that the students have been with for the rest of the competition day. Switching teams or making substitutions during the competition will result in disqualification for the entire competition. The contestants shall design and build a shipping container that will prevent an uncooked chicken egg (Grade A Large) from breaking when dropped from an initial height of 15 meters. The container must be less than 800 cm³ in volume, with no dimension longer than 25 cm. The maximum weight, including the egg, cannot exceed 100 grams. Contestants must be able to remove the egg without damage. A maximum of 30 seconds will be allowed to place the egg in the container and remove it. Each entry must be clearly labeled with the following:

- Names of students on team
- Team name
- Grade level of each student
- Coordinator's name
- School name and address

Any material may be used in the design, as long as the structure meets the design and contest rules outlined.

Design and contest rules state that no kits or pre-made designs may be used. The structure must be the individual's invention. The structure must be completely released (no strings or other attachments). **NO PARACHUTES!** The structure must land in a designated target area. No propulsion systems will be allowed. No gases (i.e. helium) other than air can be present in the structure when it is weighed. Volume will be calculated based on the shape of the containers and measured dimensions (using approximations of standard shape volumes such as a rectangular solid, cone, cylinder or sphere). The inside air volume/space will not be subtracted out in the calculations. **-a clarification of how the volume will be calculated**

Judges will inspect all containers before they are dropped. Grade A Large eggs will be supplied at the contest; contestants will not be permitted to bring their own egg. Once an egg is weighed-in (with the structure), that egg cannot be exchanged with another egg. The egg must be placed in the container on-site. A maximum of 30 seconds will be allowed to place the egg in the container and remove it. Exceeding these time limits will result in disqualification from the contest. If the egg is damaged during placement in the container, the team will be disqualified. The egg must be undamaged in order for the height value of the drop to be recorded. The egg will be dropped from an initial height of 15 meters; only two drops will be made. The highest drop distance will determine the winner and in the case of a tie, the contestant with the highest value will be the winner. The value will be based on the following equation:

$$S2 = \frac{75 * S}{(W + L^2 + V)}$$

Where S is the success factor with values:
S=100 if egg does not break
S=0 if egg breaks

W= weight of structure with egg (grams)

L= longest dimension (cm)

V= volume (cm³)

S2=total points value

Upon receipt of the egg, competitors will be given 30 seconds to secure the egg in place. After the 30 seconds has expired, competitors will not be able to make any adjustments. (This includes taping the structure closed, etc.)

Teams cannot receive help from proctors, chaperones, or advisors. Doing so will disqualify the team.

Note: Containers must meet the maximum volume requirements to be dropped. -this used to say "minimum" which was incorrect. The container can be as small as you like.

Maximum Volume: 800 cm³

Maximum Length (of longest dimension): 25 cm

Maximum Mass: 100 grams -simply a reiteration of the maximum dimensions

Containers exceeding the maximum parameters will not be dropped!

DESIGN COMPETITION – Elementary / Middle / High Schools

The design competition is structured so that no beforehand preparation is required of the students. The specifics of the competition will not be announced until the start of the competition. As a result, all teams should be equally able to perform well in the event.

OVERALL COMPETITION

Points will be awarded for all events, both individual and team events. The point values for each place are as follows:

Place	Points
1	100
2	80
3	60
4	40
5	20
6	10
7	5
8	0

The team standings will be determined in one of three categories: elementary school, middle school and high school. Trophies will be given to the top teams in each category. In the event of a tie, the team winning the mousetrap car competition will win the overall competition.



**2007 THIRTEENTH ANNUAL SECME REGIONAL OLYMPIAD
STUDENT REGISTRATION FORM**

School: _____

Please Check One: Elementary Middle High County: _____

Coordinator / Contact Person: _____

Email and Phone#: _____

Coordinator T-Shirt Size(s) YS YM YL S M L XL XXL XXXL

TEAM INFORMATION

Team Name: _____

Team Number: (Start numbering at 1): _____

1. Student Name: _____ Age: _____ Sex: _____

Student Address: _____

Parent/Guardian Name: _____

Grade: _____ T-Shirt Size: YS YM YL S M L XL XXL XXXL

2. Student Name: _____ Age: _____ Sex: _____

Student Address: _____

Parent/Guardian Name: _____

Grade: _____ T-Shirt Size: YS YM YL S M L XL XXL XXXL

3. Student Name: _____ Age: _____ Sex: _____

Student Address: _____

Parent/Guardian Name: _____

Grade: _____ T-Shirt Size: YS YM YL S M L XL XXL XXXL