



The Dr. Nelson Ying
Tri Region Science and
Engineering Fair
proudly hosts

**Overly Complicated Challenge
2015 Official Rule Book**



Welcome! The Dr. Nelson Ying Tri Region Science and Engineering Fair (Ying TRSEF) challenges you to decide which of TWO contests you wish to enter.



2015 YING TRSEF Overly Complicated Challenge
Statewide + \$50 registration
Turn the pages of a book

The **Overly Complicated Challenge (OCC)** is our New York State competition encouraging teamwork and “out of the box” thinking for people of all ages. Our inaugural Overly Complicated Challenge Task is to **Turn the Pages of a Book.**

The entry fee for this contest is \$50 payable to YING TRSEF. Your place is secured with online registration.

2015 Rube Goldberg Machine Contest (RGMC)
National + \$200 registration
Erase a chalkboard

The Rube Goldberg Machine Contest is an international competition based on the cartoons created by Pulitzer Prize winning cartoonist Rube Goldberg. The 2015 Rube Goldberg Task? **“Erase a Chalkboard.”**



Ying TRSEF’s RGMC is a feeder to the Live National Contest. Middle school, high school and college students may compete. Winning High School and College teams advance to the Live World Contest. IMPORTANT: In order to be advanced, that Ying TRSEF division must have at least 20 participants (total members from every team).

Download http://memberdata.s3.amazonaws.com/ru/rube4/files/2015_Rule_Book.pdf.

Ying TRSEF additions to the Live National Contest Rube Goldberg Machine Contest Rules:

1. Register online with RGMC, *then separately* with the Ying TRSEF at www.YingTRSEF.org/RGMC.
2. Your team will pay the \$150 registration with RGMC plus a separate \$50 to the Ying TRSEF for your live RGMC competition in Syracuse.
3. You will follow all rules of the RGMC National Contest instructions.
4. Your machine must also be able to fit through a door only 6’6” wide. **Design it in pieces.**
5. You will compete at Syracuse University on Saturday, March 14.
6. Students grades 5-12 from Ying TRSEF counties must compete in the Ying TRSEF, presenting either the Rube Goldberg engineering design work or another project they have done.
7. Your slot in Syracuse is secured by paying fees to RGI and registering online with Ying TRSEF.

If your team is from one of the 25 counties served by the Ying TRSEF (yellow on this map), please read the following:



Every team member from Division I and II teams will present a science fair project at the Ying Tri Region Science and Engineering Fair held on the contest weekend. This can be based on their contest work OR another project entirely.

Science fair registration fees are waived for students participating in the Overly Complicated Challenge. Any adults who have accompanied or participated in a team are encouraged to judge in the Science Fair on Sunday; it is a great experience. More information can be found on the YING TRSEF website www.YingTRSEF.org.

Step 1: START A TEAM

1. All teams will have at least 3 eligible members.
2. Up to four team members will receive a Ying TRSEF OCM T-shirt when you arrive. (Additional shirts can be purchased for \$10 each by emailing douglas.hemphill@oswego.edu.)
3. Teams compete by DIVISIONS:
 - * DIVISION I: Ages 11 – 14 (Middle School)
 - * DIVISION II: Ages 14 – 18 (High School)
 - * DIVISION III: Ages 18+ (College)
 - * DIVISION IV: All ages (any age mix and profession)
4. Each team **MUST** have a Team Captain who will be present at the Contest. Each team **MAY** have a Faculty Advisor whose attendance is *not required*. Each middle and high school team must have a suitable number of adult chaperones.

Step 2: REGISTER

All OCM teams must register and pay the \$50 YING TRSEF fee by March 1.

Registration and payment are online.

Entry fees are non-refundable.

While OCM teams compete only in OCM, a school may sponsor other teams which compete in the Rube Goldberg Machine Contest.

Step 3: DESIGN AND BUILD A MACHINE

Overly Complicated 2015 Challenge: Turn the Pages of a Book

- ** The team builds a machine that turns pages of a book at least twice.
- ** Opening a book counts as a page turn; closing the book does not.
- ** A page turn may turn multiple pages so long a new page is exposed each page turn.
- ** The book must be written on a paper product (sorry no ebooks or Kindles).



Machine Guidelines:

| Item | Minimum requirement | Maximum requirement |
|---|--|---------------------|
| Steps | 10 Steps (Division I) 20 Steps (Divisions II, III, IV) | 75 Steps |
| Height | None | 8' (2.4 Meters)* |
| Footprint | None | 10' x 10' (3m x3m)* |
| Time for a Single Run | None | 2 Minutes |
| Presentation Time | None | 3 Minutes |
| Reset Time | None | 8 Minutes |
| Air compressor hoses, AC or DC power cords, and/or water hoses running to or from the machine | None | 2 total |
| Hazardous materials, explosives, or flames | Not Allowed | |
| Electrical arcing | Allowed with safety check | |
| Live animals | Not Allowed | |
| Corporate logos | Allowed, with written permission from logo owner. All responsibility for copyright permission rests with the team. | |
| Use of profane, indecent, or lewd expressions or steps | Not Allowed | |
| Objects flying beyond machine footprint | Not Allowed | |
| Safe for participants and observers | Required | |
| And, of course, COMPLETE the TASK | Required | |

Machine Dimensions:

1. You have two “volume options”:

Quick and easy: Fit inside a cube of space 6 feet on each side (length, width and height).

Advanced method: Fit in an overall volume of 250 cubic feet (7.1 cubic meters). The Volume Calculator method is available at www.yingtrsef.org/overly-complicated-machine.

2. **No matter which volume option you select, think ahead and build your machine so it separates into smaller parts, so every part fit through 5.5' wide doors.**
3. Teams may build a machine in any shape they wish, so be creative!

Step 4: COMPETE IN THE OVERLY COMPLICATED CHALLENGE

| | |
|-------|---|
| 3 min | The team explains its OCM prior to running it. Give the judges a written list of the steps. Detail every step, explaining how energy is transferred between the steps. This is normally handled by one or two members of the team. |
| 2 min | Run the OCM. If the machine stops, ONE member of the team may intervene to make it work again. Each intervention results in a one-point penalty. |
| 8 min | Reset the OCM. Up to three team members may do hands-on work on the machine at a time. |



Each team may go through its explanation and run up to three times. The highest scoring attempt will be counted.

If time permits, machines will each be run individually, so team members can observe other machines.

The following is a draft schedule. The Final Schedule will be available March 1st, and depends upon registration numbers.

Saturday, March 14, 2015

- 8:00 a.m. Sign-in and set-up begins
- 9:30 a.m. Team Captains’ Meeting with Contest Director Douglas Hemphill
Science Fair registration in the same atrium
- 10a - noon Rounds of judging (open to public and media)
- 10:30a - 3:30 STEM Day on the Hill at SU and ESF
- 4:00-6:00p Set up at Science Fair hotel, complete Display and Safety / SRC reviews
- 6:00-7:00p Pizza party (for registered contest members)

Sunday, March 15, 2015

*Middle and High School OCM students from the Ying TRSEF’s 25 counties compete (they may even use work from their machine project – waived fair registration).
College/Adult OCM team members, chaperones and advisors judge at Ying TRSEF.*

Morning: Ying TRSEF judge training

Afternoon: Science Fair Judging

Late afternoon: Awards Ceremony for all competitions, including Contest Awards

Step 5: CELEBRATE!

Awards

Teams compete with other teams of their division within each competition.

Each Division’s Awards

- Best Overly Complicated Machine
- Best Rube Goldberg Machine

Additional Division II and III Awards

Best Rube Goldberg Division II Machine Advancement to National Competition

Special Awards

Ying TRSEF will also be present a selection of Special Awards.

Frequently Asked Questions

Question: Should I do the Rube Goldberg Machine Contest or the Overly Complicated Contest?

Answer: This largely depends on you. If you are in Division II or III and are interested in the national competition, sign up for the Rube Goldberg Machine Contest. If you are in Division IV, you are only eligible for the Overly Complicated Contest. Beyond this, simply pick whichever task sound the most interesting to your team and fits your budget.

Question: What is a step?

Answer: When you transfer energy from one “thing” to another, the action is a step. The same action happening over and over in a “chain” gets counted as ONE step.

Example: Pool balls rolling along and hitting each other will be counted as ONE step.

Question: What is an intervention?

Answer: Anything a team member does to make the machine continue to operate once it has been started is an “intervention.” No one except the team is ever supposed to do something to affect it! If your machine stops, a TEAM MEMBER may trigger the next step, but remember that this will be counted against your team in the scoring.



Example: Your machine’s rubber ducky gets stuck. A team member pokes it with her finger so it falls correctly. That finger poke is an intervention. You lose a point in scoring.

Question: Can programmable logic controllers or microcontrollers be used?

Answer: Yes, but you may only use one as an integral part of a step, not as a “back-up” for a failed step. If you use a controller, make sure you include that information in the written list you provide the judges. You are expected to explain in detail how the energy transfer uses the controller(s).

Example: A windmill blade swings and hits a switch that triggers a controller that then turns on a motor.

ILLEGAL: If the blade sails past the switch but still triggers the controller to start the motor, the controller isn’t really transferring its energy from one action to another action. It is just a back-up system, and that is NOT permitted.

ACCEPTED: If the blade hits the switch and the controller starts the motor, then it IS the controller which is transferring energy from the windmill to the motor. That IS what we mean by a “step.”

Question: Where can I find answers to other frequently asked questions?

Answer: **Contact Douglas Hemphill, Engineering Competition Chair
(315) 312-3144 douglas.hemphill@oswego.edu**

