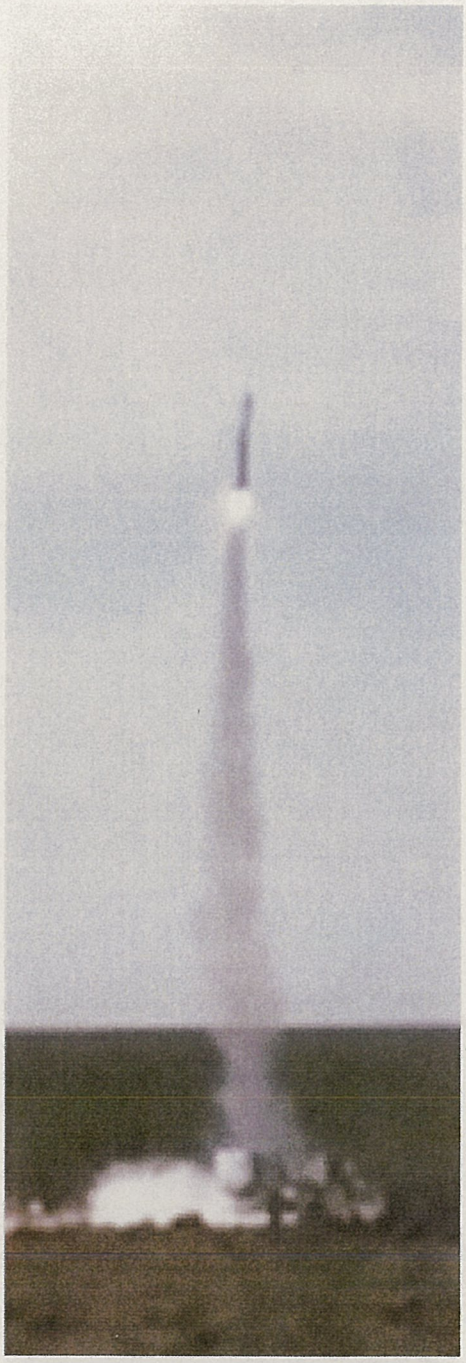
SystemsGo New Mexico

How would your students feel about THIS... as their final exam!?



What is SystemsGo?

The innovative **SystemsGo Aeroscience Studies** science, technology, engineering, and mathematics (STEM) curriculum uses project-based learning to stimulate workplace skills in

- Design
- Development
- Testing
- Analysis
- Critical Thinking
- Cognitive Reasoning
- Problem Solving
- Innovation

Why should I have SystemsGo in my school?

- Proven, 4-year, sequenced curricula
- Courses align vertically within SystemsGo's mission

SystemsGo prepares workforce of tomorrow

- Helps develop the most valued engineers to compete in the global market
- Helps develop most skilled manufacturing workforce
- Helps develop problem solvers and lifelong learners in any field
- 65% of students pursue engineering degrees

How does SystemsGo work in the classroom?

The Freshman and Sophomore curricula are designed to provide important introductory information to the students, through user-friendly project and PowerPoint modules, that promote a student's understanding of innovation, the R&D industry, and work/life skills such as design and development, testing and analysis, problem-solving, leadership, and teamwork. The Junior and Senior curricula guides students to design, develop, test, and analyze professional-grade, free-flight, sounding rockets for research applications. First-Level (Tsiolkovsky) students design and test vehicles to loft a one-pound payload to an apogee of one-mile. Second-Level (Oberth) students attempt transonic flight. And Third-Level (Goddard) students design and develop a vehicle capable of lofting a 35-lb payload between altitudes of 80,000 to 100,000-feet. Each year's projects culminate in a state-wide, professionally supported, launch event for all SystemsGo schools.

Do I have to be a rocket scientist to teach SystemsGo?

No. SystemsGo provides complete **CPE certified training** during the summer, and ongoing support from ordering program supplies to preparing for the rocket launches in spring.

Participating schools will receive all curricular and classroom support materials to ensure a successful experience for both teachers and students.

Who is using SystemsGo?

In 2016-17, hundreds of students from approximately 50 high schools in Texas size 1A to 6A are participating in SystemsGo, in addition 8 New Mexico High Schools are participating this school year.

What are the results of integrating SystemsGo?

Documented findings from Texas Tech University 2014 Program Evaluation:

- Student ratings of the rocket program experience reach from extremely positive to near heroic levels of effectiveness.
- Students' evaluation of their experience with the program was very positive to extremely positive.
- The SystemsGo program, including its curriculum and learning effects, had a powerful and positive effect on students.
- SystemsGo is meeting and exceeding its stated objectives.
- 65% of students have continued on to study engineering in college. Many are in careers at major space related companies such as NASA, United Space Alliance, and Space-X.

"This is a program that is so completely effective across the breadth and depth of what it is trying to do. It is clearly paying off, and those involved deserve commendation for that. This evaluator believes the best reward should be additional resources for program expansion and replication." Hansel Burley, Ph.D., Texas Tech University College of Education

Who supports SystemsGo?

SystemsGo is supported by a consortium of leaders in government, business, education, the public and private grant industry.

What are industry, government, and education leaders saying about SystemsGo?

U.S.

Texas Governor Rick Perry:
"One of my key educational goals is ensuring that Texas students have the science, technology and math education that makes them competitive in the global market place. SystemsGo is a first step toward meeting this goal because it will help prepare our teachers for this exciting and challenging opportunity."

Helen Reed, Ph.D., Dept. Head of Aerospace Engineering, Texas A&M University
"I have firsthand experience with the excellent students produced out of this program. This program is a visible example of successful efforts to improve education and develop the workforce."

Congressman Lamar Smith:
"...the most advanced high school rocketry program in the nation."

Steven Collicott, Ph.D., Prof. of Aeronautics/Astronautics,Purdue University
"I can confidently state that the SystemsGo rocket program is the most amazing high school high-tech experience I have seen."

Art Stephenson, NASA Administrator for Education:
"Your work in supporting the students of tomorrow is unsurpassed in the ranks of high school science teachers. It has been said, 'The launch of a rocket does not begin at the launch pad, but rather at the classroom door.' You are demonstrating the meaning of that statement to all who observe your program."

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Systems Go
New Mexico

Rockets 2018

Saturday, April 21, 2018

Jal, New Mexico

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Systems Go New Mexico

Systems Go New Mexico LESC Presentation

Thursday, September 28, 2017

INTRODUCTION

Dr. Ann Lynn McIlroy, Superintendent, Loving Municipal Schools

DISTRICT PRESENTERS

Hobbs High School

Shawna Carter, Teacher

Jal High School

David Verschueren, Teacher
Scott Komar
Nick Verschueren
Elaine O'Neal, Principal
Brian Snider, Superintendent

Lake Arthur High School

Steve Goluska, Teacher
Jazmin Pando
Loden Basett
Michael Grossman, Superintendent

Loving High School

Albert Lopez, Teacher
David Jansen, Teacher
Auden Escarjeda
Chloe Vaught
Aubrey Franco
Lee White, Principal

Lovington High School

Michael Dodson, Teacher
Samuel Coronel
Makayla Franco
Jared Golleher
Riley Mauck
Cody Porter
Abram Soto

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Flight Readiness Review

Mission: 1/1 or T 2017 Flight Readiness Review Rocket # _____

This FRR must be completed by the student team before RSOs will consider your vehicle for evaluation.

Step	Requirement	Note	Student Checks	RSO
	Stage 2			
Paper Work and Documentation				
1	Flight Readiness Review complete		Yes or No	
2	Electronic version of RockSim running on a laptop		Yes or No	
3	Organized hard copy of current RockSim simulation		Yes or No	
4	Hard copy of Motor System Pamphlet		Yes or No	
5	Hard copy of Altimeter Booklet/Pamphlet		Yes or No	
6	Hard copy specifications of any unusual components used		Yes or N/A	
Vehicle Description				
7	Color of vehicle body			
8	Color of vehicle nose cone			
9	Color of vehicle fins			
Motor System Designation				
10	Tank size (cc)			
11	Installed orifice size (in) or RG	A		
12	Fuel grain (J, J-FX, L, L-FX)			
13	Integral brass vent tube installed	B		
14	All o-rings lubricated and installed	B1		
15	Polyurethane tank vent tube installed/vents outside body	B2		
16	Ignition wire installed (L-motor systems only)	B3		
17	Motor system designation			
Physical Description of Vehicle				
18	Fully configured length (less than or equal to 120 inches)		inches	
19	Diameter of body tube (less than or equal to 6 inches)		inches	
20	Vehicle radius (less than 8.5 inches for transonic)	C	inches	
21	Number of fins (only 3 or 4 for transonic)	D		
22	Fin mounting is rigid (resists torque/compression)	E		
23	Verified rail guide buttons are mounted with nut & bolt or wood screw into a bulkhead (N/A for transonic)	F		
24	Verify rail guide buttons support suspended vehicle in horizontal position (N/A for transonic)	F		
25	Position of forward rail guide button (from aft end of vehicle)	F	inches	
26	Position of aft rail guide button (from aft end of vehicle)	F	inches	
27	**No sharp edges on fins**			
Stability Calculations				
28	Center of tank (CT) marked from aft end of fuel grain	G	inches	
29	Center of pressure (CP) marked (RockSim)		inches	
30	Center of gravity (CG) marked (RockSim)		inches	
31	Stability margin (RockSim)			
32	Center of mass (CM) verified with simulated N_2O weight	G	inches	
33	Stability (CP - CM)		inches	

Mission: 1/1 or T 2017 Flight Readiness Review Rocket # _____

34	Stability margin (stability ÷ vehicle diameter) [see footnote for minimum/maximum] School: _____ Teacher: _____	H	Student Leader: _____	
Vehicle Weight Determination				
35	Vehicle's actual fully configured dry weight	I	lbs	
36	Nitrous oxide weight	I	lbs	
37	Actual weight of fully configured vehicle plus N_2O		lbs	
38	Weight of fully configured vehicle plus N_2O (RockSim)		lbs	
39	Actual weight of vehicle plus N_2O less than or equal 30 lbs	J	Yes or No	
O-Ring Pressure and Vent Test				
40	O-ring pressure test		Pass or Fail	
41	Vents outside the vehicle		Yes or No	
RockSim Calculations				
42	Projected apogee	K	feet	
43	Maximum velocity		ft/sec	
44	Initial unguided vehicle altitude	L	feet	
45	Speed at which vehicle is unguided (greater than 40 ft/sec)	M	ft/sec	
Altimeter Information				
46	Brand of altimeter			
47	Model of altimeter			
48	Altimeter switch mounted to or flush with outer body tube	N	Yes or No	
49	Verify vent holes in accordance with altimeter requirements	N1	Yes or No	
50	No exposed wires and all connections solid	N2	Yes or No	
First Pyro Charge				
50	First pyro charge lead wires from altimeter to first chamber six inches outside the end of chamber and labeled	O	Yes or No	
51	First pyro discharge ejection altitude/time	O	ft or sec	
52	Length of first chamber to be pressurized	P	inches	
53	Volume of first chamber	P	cubic inches	
Second Pyro Charge				
54	Second pyro charge lead wires from altimeter to second chamber six inches outside the end of chamber and labeled	O	Yes or No	
55	Second pyro discharge ejection altitude/time	O	ft or sec	
56	Length of second chamber to be pressurized	P	inches	
57	Volume of second chamber	P	cubic inches	
Miscellaneous Information				
58	Main parachute diameter		inches	
59	Shock cord length, material, type & size	Q	inches	
60	Nosecone fit is snug and tested	R	Yes or No	
61	Shock cord and parachute protected from burning		Yes or No	
62	Parachute folded correctly	S	Yes or No	
63	Shock cord stowed correctly	S	Yes or No	
64	Payload weight (N/A for transonic)		pounds	
65	Payload content (N/A for transonic)			
66	Zip ties & altimeter info card attached to body of vehicle	T	Yes or No	

RSO ensure data entered into matrix

Stage 2 completed.	Stage 2 RSO Signature/Local Time

STAGE 3					
Stage 3 RSO will determine charge size, prepare it, and install it.					
67	Volume of first chamber (step 53)		cubic inches		
68	Mass of FFFFg black powder for charge #1		grams		
69	Charge #1 installed at correct location and terminals	U	Student Initials		
70	Volume of second chamber (step 57)		cubic inches		
71	Mass of FFFFg black powder for charge #2		grams		
72	Charge #2 installed at correct location and terminals	U	Student Initials		
73	Parachute and shock cord ready (no tape, attached, packed)		Student Initials		
RSO ensure data entered into matrix.					
Stage 3 completed.			Stage 3 RSO Signature/Local Time		
Stage 3 RSO will put the vehicle in the ready area and it will be scheduled for launch.					

Systems Go New Mexico

Projected Costs

Program Costs

SYSTEMS GO	Start Up Costs (Classroom Equipment)	Training	Annual License/ Support Fee	Consumables	Annual Stem Program Budget Year 1	Annual STEM Program Budget Out Years
9th Grade- (Conepts of Engineering and Technology)	$2000.00 (Beam Tester, Multimeters, Etc.)	$500.00 Webinar No Travel	$750.00 1 Year License	$500.00	1 Year Programs' License + Consumables + Training = $1750.00	1 Year Programs' License + Consumables = $1250.00
10th Grade- (Engineering Design and Presentation)	$750.00	$1500.00 5 Days Plus Travel	$1250.00 2 Year License	$300.00	2 Year Programs' License + Consumables + Training= $3050.00	2 Year Programs' License + Consumables = $1550.00
11th Grade- (Scientific Research and Design)	$1,800.00	$1500.00 5 Days Plus Travel	$3750.00 3 Year License	$2000.00	3 Year Programs' License + Consumables + Training= $7250.00	3 Year Programs' License + Consumables = $5750.00
12th Grade- (Engineering Design and Problem Solving)	$0	$750.00 2.5 Days Plus Travel	$3750.00 4 Year License	$750.00	4 Year Programs' License + Consumables + Training = $5250.00	4 Year Programs' License + Consumables + Training = $5250.00

Example: High School A

- Year 1 - Teaches just 11th grade curriculum and launches rocket.
- Training $1500.00
- Curriculum/License and Launch fee $3750.00
- Total $5250.00

- Year 2 and beyond - Teaches just 11th grade curriculum and launches rocket.
- Curriculum/License and Launch fee $3750.00

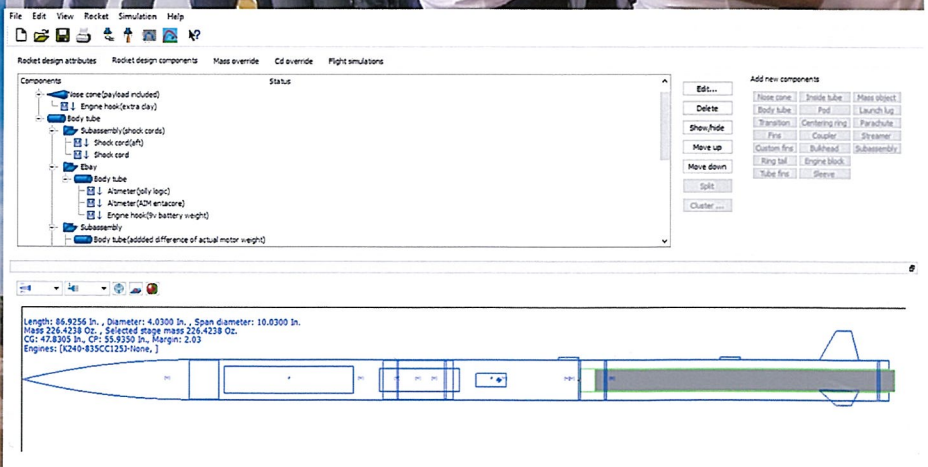
Example: High School B

- Year 1 - Teaches 9th and 11th grade curriculum and launches rocket.
- Training $2000.00
- Curriculum/License and Launch fee $3750.00
- Total $5750.00

- Year 2 and beyond - Teaches 9th and 11th grade curriculum and launches rocket.
- Curriculum/License and Launch fee $3750.00

Benefits of Systems Go

- Designed To Engage All Students Equitably
- Improves Results in Other Areas of Study
- Real World Problem Solving Skills
- Team Building
- Collaboration With Other Communities
- Enhances STEAM Programs
- New Career Opportunities
- It IS Rocket Science!



You are Cordially Invited to the Rockets 2018 Launch

Date: April 21, 2018
*Location: Jal, New Mexico**

**Launch location specifics and details to follow.*