2015 KSO Sponsors

Sponsors:

Spirit AeroSystems
Lubrication Engineers

and Wichita State University
If you wish to be reimbursed for mileage please complete the following.

Only coaches driving from outside of Sedgwick County and Andover and
only one coach per school will be reimbursed for mileage. (We will do the
math)

Name: _____________________________

School Name: __________________________

Address: _____________________________

City: ___________ State: KS Zip: ____________

Round trip mileage: ___________ @ $0.38 per mile = ___________

Social Security Number*: ________________________________

Signature: _____________________________

*The University must have your social security number to issue you a reimbursement
check. If you wish to have the check made out to your school, then your school's (or
district's) Federal Employee Identification Number (FEIN) must be provided.
Kansas Teams attending 2014 National Tournament

High School:

Olathe North High School:

Overall Finish: 37\textsuperscript{th} place

Technical Problem Solving: 1\textsuperscript{st} place
Kansas Teams attending 2014 National Tournament

Middle School:

Leawood Middle School:

Overall Finish: 31st place

Air Trajectory: 6th place

Entomology: 3rd place
Science Olympiad Registration Fee(s)

National Fee: $60
State Fee: $40

Must have a separate national membership for each team that competes in an invitational tournament
Science Olympiad Web Pages

Kansas Home Page:
webs.wichita.edu/scienceolympiad

Official National Home Page:
www.soinc.org
2015-16 Kansas Science Olympiad
State Officials

State Director:
Greg Novacek
Fairmount Center for Science and Mathematics Ed.
Campus Box 32
Wichita State University
Wichita, KS 67260-0032
Phone (316) 978-3854
Fax (316) 978-3350
e-mail: greg.novacek@wichita.edu
2015-16 Kansas Science Olympiad
State Officials

State Assistant Director:
Robert Henry
Fairmount Center for Science and Mathematics Ed.
Campus Box 32
Wichita State University
Wichita, KS 67260-0032
Phone (316) 978-3991
Fax (316) 978-3350
e-mail: robert.henry@wichita.edu
2016 Kansas Science Olympiad
Regional Information

Garden City Regional
no tournament

Hays Regional
Dates: February 9 (B) and 11 (C)
Contact: John Raacke
Fort Hays State University
2015 Kansas Science Olympiad Regional Information

Northeast Kansas (at Johnson County Community College)
  Date: Saturday, February 27 (B & C)
  Contact: Jane Bush
  Olathe North

Salina Regional
  Dates: Wednesday, January 13 (B & C)
  Contact: Dr. Don Von Bergen
  KSU - Salina
2015 Kansas Science Olympiad
Regional Information

Wichita Division B (at Andover Central High School)
  Dates: Saturday, February 20 (B)
  Contact: Marie Ruth
           All Saints Catholic School

Wichita Division C (at Andover Central High School)
  Dates: Saturday, February 20 (C)
  Contact: Karla Jacobson
Kansas Science Olympiad registration for the 2015-2016 school year is now open! Click [here](#) to register your team.

Coaches! Make sure to [register for the free Coaches Workshop](#) taking place at WSU on Saturday, October 17.
Eye Protection

Changes

• Nationals has changed the categories
  – Old categories: 1-5
  – New categories: A, B, and C

• If eye protection is required rules will indicate the
category needed: A, B, or C
Eye Protection
Category A

• Description Non-impact protection
  – Non-impact protection
  – Provide basic particle protection only

• Corresponding ANSI designation / Required marking: Z87
Eye Protection
Category A

• Examples
  – Safety glasses
  – Safety spectacles with side shields
  – Particle protection goggles
    – Seal tightly to face
    – Direct vents around sides (holes that can be seen through in a straight line)
Eye Protection
Category A

Safety Spectacles

Safety Spectacles with side shields

Particle Protection Goggles
Eye Protection
Category B

- Description
  - Impact protection
  - Provides protection from high velocity or high mass particles

- Corresponding ANSI designation / Required marking: Z87+
Eye Protection
Category B

High Impact Safety Goggles  (Z87+)
Eye Protection
Category C

• Description Non-impact protection
  – Indirect vent / chemical splash protection
  – Seals tightly to face completely around eyes
  – Indirect vents (no direct path through hole)

• Corresponding ANSI designation / Required marking: **Z87 or Z87 D3** (the D3 designation is not required)
Eye Protection
Category C

Indirect Chemical Splash Goggles
Eye Protection

- Goggles marked with Z87+ with indirect vent chemical / splash protection qualifies for all three categories
- VisorGogs
  - Do not seal tightly to face
  - Qualifies as indirect vent / chemical splash protection
Eye Protection

• Contestants are responsible for providing their own protective eyewear.

• Teams **WILL NOT** be allowed to compete without adequate eye protection. This is **NON-NEGOTIABLE**.
Eye Protection
Suggestion

• Suggest that coaches just go out purchase a dozen High Impact Chemical / Splash Goggles (Z87+ D3).

• Enough for the whole team.

• Should prevent students showing up for an event with inadequate eye protection for that event.
Eye Protection

Suggestion

General Event
Rules and Eye Protection

See website

http://webs.wichita.edu/scienceolympiad/Coaches_Workshop/Handouts/General_Rules_and_Eye_Protection.pdf
Listservs

Subscribe to the state (and national) listserv Information is on-line at:

http://webs.wichita.edu/scienceolympiad/General_Pages/ListServ_Information.htm
KSO Registration

Logging back in

Current News

Kansas Science Olympiad registration for the 2015-2016 school year is now open! Click here to register your team.

Coaches! Make sure to register for the free Coaches Workshop taking place at WSU on Saturday, October 17.
If you participated in Kansas Science Olympiad last year, your userID and password from last year are still valid and we encourage you to reuse them. Use the form fields below if you remember your userid and password.

User ID
Password

Login

If you are registering your school for the first time click here.

If you forgotten your password or user id click here.

If you are a new coach for an existing team click here.
Kansas Science Olympiad 2010
New State Registration Procedures

What's New
Prior to last year all Kansas teams paid their $60 membership fee directly to the national Science Olympiad office and they received their manuals directly from them. Beginning with the 2008-09 school year, the national office began requiring each state to collect the national membership fee and forward it to them. (In fact most states already collected that fee as part of their state fee.) Thus any purchases orders or checks sent to the national office will be returned either to you or to me. Regardless, this will result in a delay for you getting your manual. When we receive your payment, we will send out your manual.

After much consideration, Kansas will begin charging a $40 state membership fee beginning with the 2009-10 school year. This along with the $60 national fee means that your total registration fee will be $100.

To complete your registration for the 2009-10 school year update your school and coach information (or enter it if you are registering for the first time). You will receive an e-mail confirmation of any new information that was added. If you do not receive the confirmation you should assume that the changes were not saved.

Once your registration is completed, clicking on the 'registration invoice' link will generate an invoice which you can then submit for payment. At this time payment must be made by check and sent to the address on the invoice. (Please include a copy of your invoice with your payment and make sure it is sent to campus box 32 as indicated on the invoice. Many of your districts deal with other WSU departments and a fair number of the checks we receive have been routed through other departments.) Your registration is not complete until we receive your payment.

Once we’ve received your payment, your coaches’ manual will be sent to you. (Each time you log into your school’s registration page you will receive a reminder if payment has not yet been received. If you have submitted it for payment, don’t worry about the message, however, if sufficient time has elapsed such that payment should have been made, please look into it.) Payment must be received before you can participate in an invitational or regional tournament.

Registration Deadlines
The priority registration deadline is November 6, 2008. Regional assignments will be made by November 20th. (Please note that in some areas of the state, the regional tournaments are at or near capacity. In those cases the earlier you register, the greater the chance you will be assigned a spot in the regional of your choice.) Regional assignments for teams registering after November 6th will be made on a case by case basis.

The last day to register is December 15, 2008.

If you run into any problems please contact greg.novacek@wichita.edu.
KSO Registration - updating
Completing your Kansas registration automatically registers you for a regional tournament. Registration should be completed by November 4\textsuperscript{th}, with regional assignments made by November 20\textsuperscript{th}.

(Please note that in some areas of the state, the regional tournaments have been near capacity. In those cases the earlier you register, the greater the chance you will be assigned a spot in the regional of your choice.)

Regional assignments for teams registering after November 4\textsuperscript{th} will be made on a case by case basis.

Last day to register is December 11, 2015
State Invitations

• Two top finishers in each regional

• Additional invitations based on number of teams that compete in regional.
## State Invitations -- 2015

<table>
<thead>
<tr>
<th>Regional</th>
<th>Division B</th>
<th>Division C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garden City</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Hays</td>
<td>6 / 11</td>
<td>6 / 11</td>
</tr>
<tr>
<td>Northeast KS</td>
<td>15 / 30</td>
<td>10 / 19</td>
</tr>
<tr>
<td>Salina</td>
<td>5 / 9</td>
<td>6 / 11</td>
</tr>
<tr>
<td>Wichita</td>
<td>5 / 10</td>
<td>8 / 16</td>
</tr>
<tr>
<td>Total</td>
<td>30 / 60</td>
<td>30 / 57</td>
</tr>
</tbody>
</table>
State Invitations for Regional Winners

• Issue invitations to 1st place regional finishers if their team does not qualify for the state tournament
  – Win medal if one of the top three places in what would be their school’s division
  – Does not affect other medals awarded
  – Does not affect team point totals
  – Adds a handful of students to the tournament
EVENTS
Out With the Old -- Division B

- Can’t Judge A Powder
- Entomology
- Robo-Cross
- Simple Machines
- Solar System
- Wheeled Vehicle
Out With the Old -- Division C

- Entomology
- Bungee Drop
- Compound Machines
- Mission Possible
- Scrambler
- Technical Problem Solving
New Events

• Physical Science & Chemistry Events
  – Wind Power (B & C)
  – Food Science (B)

• Inquiry & Nature of Science Events
  – Game On (C)
  – Hydrogeology (C)
New Events

- Earth & Space Science Events
  - Reach for the Stars (B)

- Life, Personal, and Social Science Events
  - Invasive Species (B & C)
New Events

• Technology & Engineering Events
  – Mission Possible (B)
  – Scrambler (B)
  – Electric Vehicle (C)
  – Robot Arm (C)
New Event Summaries
Physical Science and Chemistry
Food Science (B)

• Description
  – Teams will study the science behind milk products and experiment with ingredients and other variables to produce and analyze results to produce the best dairy products.

• Eye Protection C

• Impound: yes (notebook)
Food Science (B)

- Event Parameters
  - Students Bring
    - Safety equipment
    - Writing utensil
    - Calculator
    - Materials listed in rules
    - 5 pages both sides of any information
Food Science (B)

• Event Parameters
  – Supervisors provide
    • Necessary milk products
    • Reagents
    • Lab equipment
  – Safety Requirements
    • Goggles
    • Apron or lab coat (skin covered from neck to wrists / toes)
    • Long hair tied back
Food Science (B)

• Competition
  – Notebook
    • Prior to tournament students must perform 3 or more experiments for each lab task
      – Ice cream formation
      – Determine curd mass
      – Determine milk fat from cream
    • Impounded and graded
  – Lab tasks
    • Use provided food materials to perform lab tasks above
Food Science (B)

– Lab tasks

  • Use provided food materials provided to perform lab tasks -- see rules for details
    – Ice cream formation
    – Determine curd mass
    – Determine milk fat from cream

  • Regionals: 1 task
  • State: 1 or 2 tasks
  • Nationals: 2 or 3 tasks
Food Science (B)

– Test topics
  • Written exam on dairy food science topics
  • See rules for examples

• Scoring
  – Final Score = Notebook Score + Lab Task(s) Score + Test Score – penalties
  – See rules for details
  – High score wins
Wind Power (B & C)

• Description
  – Teams will build a blade assembly that consists of any kind of propeller / pinwheel / rotor attached to a compact disc (CD), which will be used to capture wind power.
  – Students will also be tested on their knowledge regarding alternative energy.

• Impound: Yes

• Eye protection B
Wind Power (B & C)

- **Construction Parameters**
  - Teams bring pre-constructed blade assembly attached to cd
  - Nonmetallic substances
  - Commercial kits can be used but must be modified
  - Students must be able to answer questions regarding: design, construction, and operation of blade assembly
Wind Power (B & C)

- Blade length: 20 cm (B); 14 cm (C)
- Rear extension
  - None within 3 cm of center
  - Otherwise 2 cm maximum
Wind Power (B & C)

• Event Parameters
  – All part II references materials must be securely bound in a 3 ring binder
  – Eye protection only necessary during part I
  – Supervisors will provide
    • Fans
    • Stands
    • Generators that will accommodate a cd
Wind Power (B & C)

• Competition
  – Part I -- Device Testing
    • Tested at both high speed and low speed
    • 3 minute maximum for each test
  – Part II -- Written test (20 to 30 minutes)
    • 25 questions -- 5 each from
      – Rotor / fan blade construction
      – General power generation questions
      – Power storage
      – Power transmission
      – Historical wind power designs
Wind Power (B & C)

• Scoring
  – Part 1
    • Power Score = (Max Voltage)^2 / load resistance
    • Pt. 1 score sum of low and high speed
    • See penalties in rules
  – Part 2
    • Written test worth 50 points
  – Final score = Part 1 + Part 2
Wind Power (B & C)

• Scheduling
  – Successive teams
    • 1 team every 10 minutes
    • Test device then take test
  – Block
    • Everyone starts test at same time
    • Students are pulled out to test device then return to finish test
    • 40 minutes to complete both parts
  – Preference?
Inquiry and the Nature of Science
Game On (C)

• Description
  – This event will determine a team’s ability to design and build an original computer game incorporating the theme provided to them by the supervisor using the program Scratch.

• Impound: No

• Eye protection: none
Game On (C)

• **Event Parameters**
  – Teams provide
    • Writing instrument(s) [required]
    • Headset(s) to assist in testing audio [optional]
    • Microphone to assist in recording audio [optional]
  – Supervisor Provides
    • A computer capable of running Scratch.
    • A broad theme to build their original computer game around
    • Scrap paper
Game On (C)

• Competition
  – Students assigned broad theme (which includes scientific principles) to build game
  – Use “Scratch” [http://scratch.mit.edu]
  – Save game where specified
  – Sample themes
    • Gravity
    • Silly sports
    • Newton’s Second Law
Game On (C)

• Scoring
  – See “Game On” Rubric on national website.
    • Game Mechanics [50 pts possible]
    • Game Play [50 pts possible]
Hydrogeology (C)

• Description
  – Students will manipulate a groundwater computer model
  – Answer questions about groundwater concepts
  – Evaluate solutions, based on hydrogeological evidence, to reduce anthropogenic effects on groundwater
Hydrogeology (C)

- Event Parameters
  - Teams provide
    - Writing instrument(s)
    - Calculator
    - Protractor
    - 8½ by 11 note sheet
  - Supervisor Provides
    - Modeling resources
    - Answer sheets
Hydrogeology (C)

• Competition
  – Part 1
    • Written test [at least one question each from]
      – the fundamentals of groundwater and hydrogeology
      – surface-groundwater interactions
      – the relation of groundwater flow to geologic structure
      – management of contaminated groundwater
  – Part 2
    • use and manipulate a scenario from the Hydrogeology Challenge under static pumping conditions to answer questions
Hydrogeology (C)

• Competition
  – Part 3
    • Given a set of circumstances the students will:
      – evaluate the risk of contamination to wells in the Hydrogeology Challenge scenario,
      – be able to explain any and all assumptions that were made in their analysis
      – complete a Remediation Techniques Table

• Scoring
  – High score wins
Earth & Space Science
Reach for the Stars (B)

• Description
  – Students will demonstrate an understanding of the properties and evolution of stars
    • especially star forming regions and supernova remnants
    • their observation with different portions of the electromagnetic spectrum: Radio, Infrared, Visible, Ultraviolet, X-Ray and Gamma Ray.

• Event Parameters
  – Two 8.5” by 11” two-sided pages of any information
Reach for the Stars (B)

• Competition
  – Part 1 (identification)
    • Objects / constellations given in manual
    • Identify on star chart, HR Diagram and / or photo
    • Knowledgeable of evolutionary stages of objects
Reach for the Stars (B)

• Competition
  – Part 2 (interpretive tasks)
    • Stellar evolution
    • Spectral classification of stars
    • Observation using multiple portions of the electromagnetic spectrum
    • The relationship between stellar temperature, radius, and luminosity
    • Magnitude and luminosity scales, distance modulus, inverse square law
Reach for the Stars (B)

• Scoring
  – High score wins

• Questions
Life, Personal, and Social Science Events
Invasive Species (B & C)

• Description
  – This event will test student knowledge of invasive species in local and national ecosystems

• Event Parameters
  – Can bring a three ring binder with anything
Invasive Species (B & C)

• Competition
  – Series of lab stations or Power Point
  – Station examples
    • Perform basic identification of specimen
    • Questions about specimen
      – some aspect of its life
      – history,
      – anatomy and physiology,
      – control methods
      – See rules for other areas
Invasive Species (B & C)

• Scoring
  – High score wins
Technology and Engineering
Mission Possible (B)

• Description
  – Prior to the competition, competitors will design, build, test, and document a Rube Goldberg®-like device that completes a required task through an optional series of simple machines.

• Impound: Only at state and nationals

• Eye Protection: B
Mission Possible (B)

- Construction Parameters
  - Size: 60cm by 60cm by 60cm
  - Following starting task device must be autonomous.
  - Remote control results in disqualification
  - Must execute transfers from one simple machines to another
  - Maximum of 18 simple machine transfers
  - See rules for additional information
Mission Possible (B)

• Competition
  – Tasks
    • Start task – drop a racquetball into device
    • Final task: ringing or striking a bell
    • Only unique transfers are scorable
    • Others transfer can occur in any order
    • See rules for additional details
Mission Possible (B)

– Task sequence list
  • List of all transfers performed by the device
  • Must be submitted at check-in or impound

– Target operation time
  • Regionals: 60 seconds
  • State: 61 and 90 seconds (announced after impound)

– If device jams students can adjust with penalty
Mission Possible (B)

• Scoring
  – Points for completing various tasks – see manual
  – Penalties
    • Runs beyond ideal time
    • Touches
    • Objects leave device
    • Exceeds dimensions
Mission Possible (B)

• Scoring
  – Tiers
    • No violations
    • Construction violations (except dimensions)
    • Impounded after deadline

• Questions
Scrambler (B)

• Description
  – Competitors must design, build, and test one mechanical device
  – use the energy from a falling mass to transport an egg along a track as quickly as possible
  – stops as close to the center of a Terminal Barrier without breaking the egg.

• Impound: yes

• Eye protection: none
Scrambler (B)

• Construction Parameters
  – Must not exceed .90 meter in any direction when in launch position
  – All energy used to propel the egg transport vehicle must come from a falling mass not to exceed 2.00 kg
  – Minimum travel distance of 8.5 meters in a 1.5 m wide lane.
  – Should come to a stop as close as possible to the barrier
Scrambler (B)

– Egg must rest on top of two \( ¼'' \) round wooden dowels extending perpendicularly out a maximum of 4.0 cm from a rigid, unpadded and completely flat (no unfilled holes) backstop for the egg

– No screws, nails or similar attachment devices must be visible on the side of the backstop that the egg must rest against.

– See rules for additional requirements
Scrambler (B)

• Track
  – Terminal barrier location
    • 9 to 12 m from start line
    • 1.0 m intervals for regionals
    • .25 m intervals for state
  – Photogate locations at .5 m and 8.5 m from starting line
Scrambler (B)

• Competition
  – 8 minutes to complete two runs
  – See rules for additional information

• Scoring
  – Run score = distance score + time score – penalties
    • Distance score = pointed end of egg to center of terminal barrier
    • Time score = (run time) X 10
Electric Vehicle (C)

- **Description**
  - Teams must design, build, and test one vehicle that uses electrical energy as its sole means of propulsion to travel as quickly as possible and stop close to a Target Point.

- **Impound:** Yes

- **Eye Protection:** None
Electric Vehicle (C)

- Construction Parameters
  - Vehicle travels between 9 and 12 meters
    - Regionals: 0.50 m interval
    - State: 0.10 m interval
    - Announced after impound
  - All energy from common, commercially available batteries;
    - Single 9V battery
    - Single battery pack (7.2 volts or less)
    - maximum of 6 cells rated at 1.5 volts;
Electric Vehicle (C)

• Competition
  – Eight minutes for 2 runs
  – See rules for additional information
Electric Vehicle (C)

• Scoring
  – Lowest Run Score counts
  – Run Score = + Time Score + Distance Score
    - Penalties
  – Time Score = (Run Time) X 10
  – Distance Score = absolute value (target point – measurement point distance)
Robot Arm (C)

• Description
  – Prior to the competition, teams must design, build, document, and test one robotic device to move scoreable Items.

• Eye Protection: B

• Impound: No
Robot Arm (C)

- Construction Parameters
  - Must fit in a 30 cm by 30 cm by 100 cm box
  - May use modified kit parts
  - Competitors cannot impart energy directly into the arm
  - Commercial batteries must have voltage labeled; must not exceed 14.4V
  - If radio controlled, must use frequencies specified at website
  - Must answer questions on design, etc.
Robot Arm (C)

• Technical documents submitted at check-in
  – Illustration of basic structure with labels
  – Operating description
  – Written practice log
  – See rules for additional details
Robot Arm (C)

- Competition Area
Robot Arm (C)

• Competition
  – Must place items in goals (egg cartons)

<table>
<thead>
<tr>
<th>West Goal Carton</th>
<th>North Goal Carton</th>
<th>East Goal Carton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pencil</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Lego</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Ping Pong</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

  – Other scoring items in rules
  – Penalties for incomplete (5% each) or missing (20%) technical documents
Robot Arm (C)

• Scoring
  – Tiers
    • Devices that meet all requirements
    • Competition violations
    • Fail to meet construction spec
    • Violations of frequency rules; cannot move

• Questions
Break Time