

COORSTEK.



# Parents & Teachers: Supporting Your Science Fair Students

2021-2022 DMRSEF

Season Kickoff

REGENERON

# ISEF

A PROGRAM OF  
SOCIETY FOR SCIENCE



Douglas

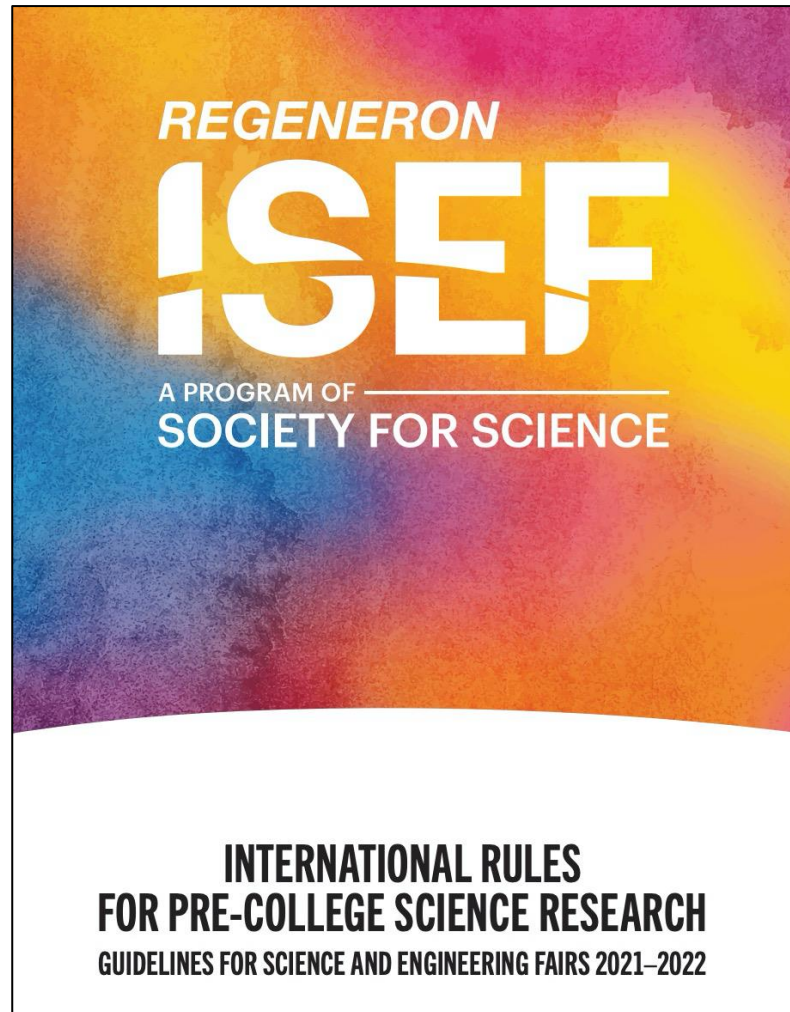
★ Middle School    ★ High School

COORSTEK

DMRSEF DENVER  
METRO  
REGIONAL  
SCIENCE AND  
ENGINEERING  
FAIR 

# DENVER SCIENCE FAIR

# ISEF Rules & Forms



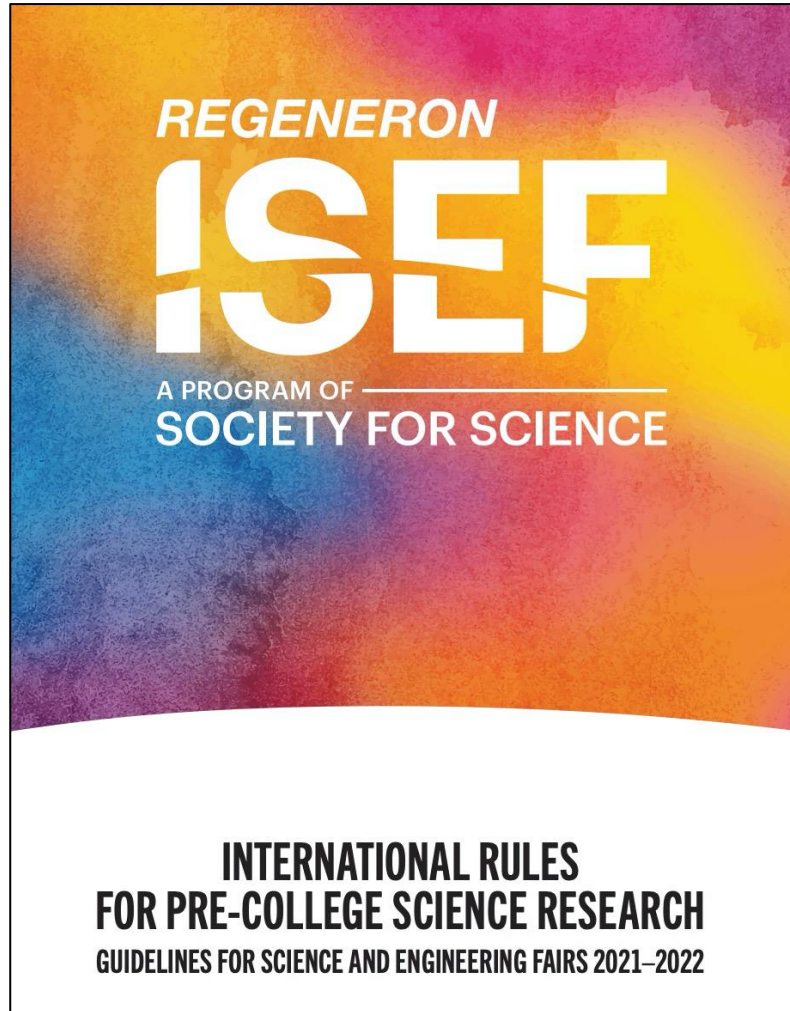
The International Rules are organized into 5 key sections:

- Rules for **All Projects**
- **Human Participant Rules**
- **Vertebrate Animal Rules**
- **Potentially Hazardous Biological Agents (PHBA) Rules**
- **Hazardous Chemicals, Activities, or Devices Rules**

**ISEF Rules Wizard:**

<https://ruleswizard.societyforscience.org/>

# ISEF Rules & Forms



**CoorsTek Denver Metro Regional Science and Engineering Fair**  
College of Liberal Arts and Sciences

How to Science Fair | Students | Student Grants | Educators | Judges & Volunteers | **Forms and Rules** | Categories | Giving

### Forms and Rules

Ready to begin your project? All posted forms and rules have been updated for the 2021-2022 season!

[ISEF 2021-2022 Rules](#) | [ISEF Rules Wizard](#) | [Do I need pre-approval?](#)

Please review the additional guidelines in place this year in light of COVID-19 before beginning your project!

Have a question about rules and forms? Email: [src@societyforscience.org](mailto:src@societyforscience.org)  
Have a question about your project idea? Email: [denverciencefair@ucdenver.edu](mailto:denverciencefair@ucdenver.edu)

#### Forms Required for All Projects

- Form 1 - Checklist for Adult Sponsor
- Form 1A - Student Checklist
- Form 1B - Approval Form (EVERY student needs this form)
- Form 3 - Risk Assessment Form
- 2021 Virtual Safety Waiver

#### Project-Dependent Forms

- Form 1C - Regulated Research Institutional/Industrial Setting Form
- Form 2 - Qualified Scientist Form
- Form 4 - Human Participants and Informed Consent Form
- Human Informed Consent Template (Need with Form 4)
- Form 5A - Vertebrate Animals Form
- Form 5B - Vertebrate Animals Form
- Form 6A - Potentially Hazardous Biological Agents Form
- Form 6B - Human and Vertebrate Animal Tissue Form
- Form 7 - Continuation Projects Form

**2022 ISEF Rules**



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DENVER SCIENCE FAIR

## FROM START TO SCIENCE FAIR

LEARN MORE AT:

[CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR](http://CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR)

**START NOW!  
IT'S NEVER  
TOO EARLY!**

### Plan & Prepare

- Identify your research question
- Find out what is already known
- Talk to subject matter experts

**SEPTEMBER**

### Get Involved

- Attend a kickoff event
- Register to participate
- Learn about fair rules and paperwork

### Design Your Project

- Finalize your research question
- Plan your experimental procedures
- Obtain necessary pre-approvals

### Start Experimenting

- Gather your materials
- Conduct your experiment
- Take thorough notes as you go

**JANUARY**

### Complete Your Project

- Analyze your findings
- Double-check and submit your paperwork
- Reach out to DMRSEF staff with questions

**FEBRUARY**

### Get Fair-Ready

- Revise forms, if required
- Create and submit presentation materials
- Attend *Competition Ready Series* events

**CELEBRATE YOUR SCIENCE AT THE  
DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!**

# How to Science Fair

**How to Science Fair  
Handout**



**DENVER SCIENCE FAIR**

# Resources Available

**CoorsTek Denver Metro Regional Science and Engineering Fair**  
College of Liberal Arts and Sciences

How to Science Fair | Students | Student Grants | Educators | Judges & Volunteers | Forms and Rules | Categories | Giving | Event Partners

## How to Science Fair

### Start Here!

#### Planning & Preparing

- Check out our video on [GETTING STARTED](#)
- Decide if you will be working by yourself or as a team of up to three and begin to identify your teachers, mentors, parents, and other adults that will be involved.
- Begin narrowing down your interests for a science fair project and start learning more about your topic and field of study.
  - There are resources on the [STUDENTS](#) page for selecting a topic.
  - Check out the [2021 DMRSEF SHOWCASE](#) or the [ISEF PROJECT DATABASE](#) for inspiration.
- Familiarize yourself with the [ISEF RULE BOOK](#) before deciding on a project.
- Talk to subject matter experts. Reach out to the DMRSEF team if you need help locating an expert or mentor.
- Apply for a science fair mini-grant to fund your science.
  - Learn more and apply at: [SCIENCE FAIR MINI GRANTS](#)

#### Getting Involved

- Join our [MONTHLY NEWSLETTER](#) for updates from the team.
- Attend a DMRSEF Season Kickoff event (Registration opens soon!).

IN-PERSON: Saturday, 9/18/2021, 9 am - 12 pm, CU Denver Campus  
VIRTUAL: Wednesday, 9/22/2021, 5 - 6 pm, on ZOOM

- Sign up to participate at the fair, **you do not need a completed project to register!**
- Check out our pre-season events for help along the way.
  - Attend Speak With a Scientist programs to meet cool mentors and get project inspiration.
  - Join us for Science Fair Q&A programs with any questions or ideas you might have. DMRSEF staff can help you with paperwork, project plans, resources, etc.

#### Designing Your Project

- Make sure you have a testable question or design goal.
  - Check out our video guides on [FORMULATING YOUR QUESTION](#) and [YOUR HYPOTHESIS](#)
- Plan your experimental procedures.
- Make sure any forms that require signatures before the start of experimentation are ready to go, including:
  - Form 1 – Checklist for Adult Sponsor, Form 1B – Approval Form, Form 2 – Qualified Scientist Form\*, Form 3 – Risk Assessment Form, Form 4 – Human Participants and Informed Consent Form\*, Forms 5A & 5B– Vertebrate Animals Forms\*, Form 6A – Potentially Hazardous Biological Agents Form\*, Form 6B – Human and Vertebrate Animal Tissue Form\*
  - (\*These forms may not apply to your project. Refer to the ISEF Rules Wizard tool helps determine what forms are needed project.)
  - Check your project plan against [ALL DMI RULES](#)
  - If you are working with a team, have a clear collaboration and division of work.
  - Work with your adults to ensure your project materials are ready to go before beginning
    - Check out this video on [METHODS & MATERIALS](#)
  - Obtain any necessary pre-approvals (IRB/SRCA/ACUC...)
  - Learn more about [REGULATORY BODY](#) video.
  - Check out this [PREAPPROVAL FLOW](#)

#### Start Experimenting

- Start your paperwork (Some forms must be completed prior to the start of experimentation!)
  - All forms can be found on the [FORMS AND RULES](#) page.
  - Use the [ISEF RULES WIZARD](#) to determine which forms your project requires.
  - [THIS PIAVIST](#) walk you through completion

#### Complete Your Project

- Analyze your findings.
  - Check out this video on drawing your [CONCLUSION](#)
- Be sure to complete and double-check your paperwork.
  - Keep an eye out for pre-season events designed

#### Get Fair Ready

- Familiarize yourself with virtual and in-person safety regulations.
- Begin creating virtual AND physical display

**ONLINE MATERIAL SUBMISSION OPI**  
**FEBRUARY 1, 2021**  
**ALL MATERIALS MUST BE UPLOADED**  
**FEBRUARY 11, 2021**

[How to Science Fair | CoorsTek Denver Metro Regional Science and Engineering Fair | University of Colorado Denver \(ucdenver.edu\)](#)

How to Science Fair



## Project Resources

Everything from project ideas, help with forms, and explanations of the science fair process can be found here! Still can't find what you are looking for? Reach out to [DMRSEF@ucdenver.edu](mailto:DMRSEF@ucdenver.edu) and we will point you in the right direction!

### Need some help along the way? Start here!

### How to complete your ISEF forms:

### Additional Resources by Topic

- General Science Skills
- 3D Printing and Digital Design
- Aerospace
- Earth Science
- Engineering and Design
- Health
- Math
- Physics
- Psychology

### Resources for at-home science projects:

Resource Library



DENVER SCIENCE FAIR



# Resources Available Online

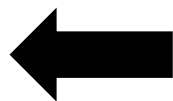
- How to Science Fair videos
- Paperwork tutorial videos
- Project ideas
- Online learning resources
- ...and more!

The screenshot shows the website for the CoorsTek Denver Metro Regional Science and Engineering Fair. The page is titled "Educators" and features a prominent red brushstroke overlay with the text: "THE 2021 COORSTEK DMRSEF WILL TAKE PLACE AS A VIRTUAL WEEK LONG EVENT: FEBRUARY 15TH - 22ND, 2021 PLEASE CHECK BACK REGULARLY FOR DETAILS". Below this, there are sections for "Resources for remote science teaching:" with four cards: "STEM Generation - Teachers", "Science Fair Central", "Science Buddies: Lesson Plans", and "Simplified STEM Activities Help Fill Gap for Online, Remote, Hybrid Learning". To the right, there are sections for "Subscribe to our Monthly Newsletter! The Science Snippet", "Find Us Online!" with social media icons for Facebook, Twitter, Instagram, and YouTube, and "Support Us!" with a "Donate Today!" button.



## 2. Get Involved (you're here, you did it!)

FROM START TO SCIENCE FAIR	
LEARN MORE AT: CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR	
START NOW! IT'S NEVER TOO EARLY!	<b>Plan &amp; Prepare</b> <ul style="list-style-type: none"><li>Identify your research question</li><li>Find out what is already known</li><li>Talk to subject matter experts</li></ul>
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CELEBRATE YOUR SCIENCE AT THE DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!	



- Join our *Monthly Newsletter* for updates from the DMRSEF team.
- ***Register yourself*** for the fair, you do not need a completed project to register!
- ***Sign up to participate*** in pre-season events for help along the way.
- Attend *Speak with a Scientist* programs to meet cool mentors and get project inspiration.
- Join us for *Science Fair Q&A* programs with any questions or ideas you might have. DMRSEF staff can help you with paperwork, project plans, resources, and more!

# Year-Round Events (Season Timeline Handout)

## September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

## October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

## December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

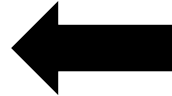
Season Timeline



# 1. Plan & Prepare

- Begin narrowing down your interests for a science fair project and start learning more about your topic and field of study.
- Check out the [2021 DMRSEF Showcase](#) or the [ISEF Project Database](#) for inspiration.
- Familiarize yourself with the [ISEF Rule Book](#) before deciding on a project.
- Decide if you will be working by yourself or as a team (3 people max).
- Begin to identify your teachers, mentors, parents, and other adults that will be involved.

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# Project Roles & Responsibilities

## Student Researcher(s)

- Responsible for all aspects of the project
- Can compete in team of up to 3 students

## Student(s) Parent/Guardian

- Must give permission for student participation
- May serve in other adult roles described below

## Adult Sponsor (AS)

- May be a **teacher**, **parent**, professor, and/or professional scientist
- Must have a solid background in science, understand ISEF rules, and be willing to work closely with the student(s) throughout the duration of the project
- Adult Sponsor must stay consistent throughout the project

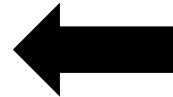


## Qualified Scientist (QS)

- Should have earned doctoral or professional degree in a scientific discipline *related to the student's area of research*
- In some cases, professional experience can substitute for advanced degrees (check with DMRSEF Staff for approval)
- Qualified Scientist must be familiar with local and federal regulations governing the student's area of research
- **Adult Sponsors** can also serve as the **Qualified Scientist** if they meet the criteria described above
- If the QS is located in a different city/state/country that prevents them from directly overseeing the student's work, they may appoint a trained **Designated Supervisor (DS)**
- The **Designated Supervisor** must be trained in student's area of research, but does not need an advanced degree
- The **Adult Sponsor** may act as the **Designated Supervisor**

# 3. Design Your Project

- Make sure you have a testable question or design goal.
- Plan your experimental procedures.
- Make sure any forms that require signatures before the start of experimentation are ready to go.
- Check your project plan against *All DMRSEF and ISEF Rules*.
- If you are working with a team, have a clear plan for collaboration and division of work.
- Work with your adults to ensure your project plan and materials are ready to go before beginning your experiments.
- Obtain any necessary pre-approvals from review boards (IRB/SRC/IACUC).
- Check out the helpful *SRC Preapproval Flowchart* from CSEF.
- Reach out to the DMRSEF team if you need assistance with a preapproval.



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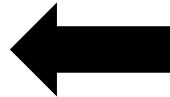
# Regulatory Bodies and Project Pre-Approval

- Sometimes projects need **pre-approval** before the start of experimentation (Form 1B)
  - **Human Subjects**
  - **Animal Subjects**
  - **Potentially Hazardous Biological Agents (PHBAs) or other high-risk activities**
- **Where** you are conducting the project will determine **who** will need to preapprove
  - **Home/School/Field**
  - **Industrial Setting or Regulated Research Institute (RRI)**
- **School (Local) SRC/IRB**
  - No one on the board can be directly related to the student's project (i.e. teacher or parent)
  - Minimum of 3 members
    - An educator
    - A school administrator (preferably principal or vice principal)
    - A professional with the expertise to evaluate the physical/psychological risk of the study (nurse, psychologist, doctor, social worker, etc.)

# 4. Start Experimenting

- Start your paperwork (Many forms must be completed prior to the start of experimentation)!
- All forms can be found on the [Forms and Rules page of our website](#).
- Use the [ISEF Rules Wizard](#) to determine which forms your project requires.
- The [Denver Science Fair's Guide to ISEF Forms](#) video playlist walks you through how to complete your paperwork in short videos.
- Gather your materials.
- **Conduct your experiment.**
- Take good notes as you go, including pictures and videos of your experiment and procedures.

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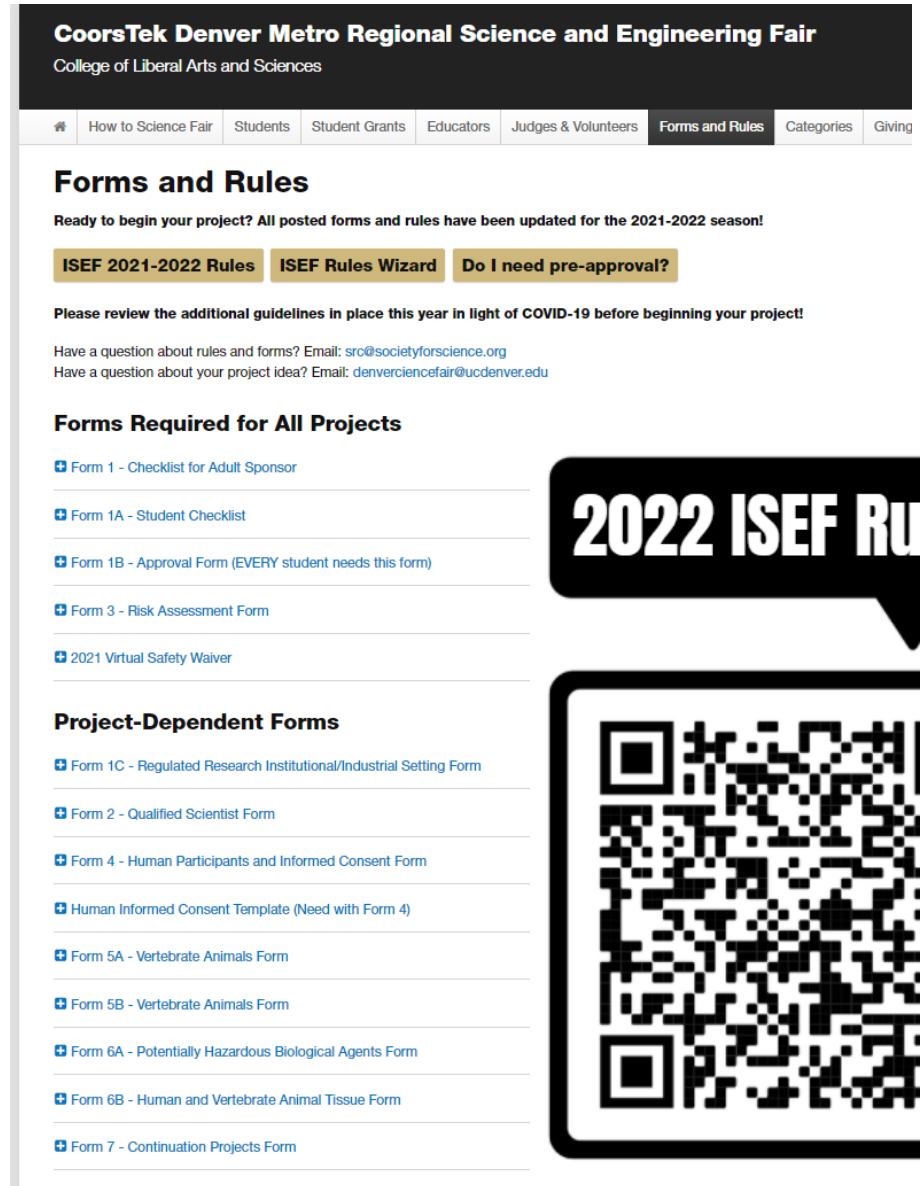
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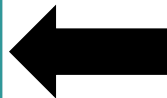
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**2022 ISEF Rules**



# 5. Complete Your Project

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CELEBRATE YOUR SCIENCE AT THE DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!	



- Analyze your findings.
- Complete and double-check your paperwork.
- Determine the proper category for your project.
- Submit your project details and paperwork to DMRSEF.
- Look out for emails from the DMRSEF Regional SRC. 80-90% of projects require paperwork corrections. The SRC is here to help!
- **PROJECT SUBMISSION OPENS MONDAY, NOVEMBER 1, 2021**
- **FINAL PROJECT SUBMISSIONS ARE DUE FRIDAY, JANUARY 7, 2022**

# Regional SRC Review

- The **DMRSEF SRC** is a group of scientists and educators that reviews EVERY project submitted to the fair prior to competition
- We read your research plans and check your forms to make sure you have followed all required rules and guidelines
- Our main concern is **SAFETY** – your safety as scientists, the safety of your human and/or animal subjects, the safety of the environment
- We are not here to stop you from competing in the fair! My goal every year is to have ZERO projects fail to qualify (FTQ)
- The SRC is here to help you get your paperwork over the finish line. You cannot compete until your SRC Reviewer has signed off on your project, so please be responsive to their emails and requests
- If at any point in the season you are in doubt about the rules, email [denversciencefair@ucdenver.edu](mailto:denversciencefair@ucdenver.edu) – **We want to help!**

# Regional SRC Review Timeline

- **January 7<sup>th</sup>:** Project registration and paperwork due
- **January 12<sup>th</sup>:** SRC reviewer assignments finalized - SRC begins at-home reviews
- **January 22<sup>nd</sup>:** **SRC DAY** – committee spends a full Saturday reviewing and discussing projects!
- **January 24<sup>th</sup> – February 11<sup>th</sup>:** SRC works with students to rectify paperwork corrections
  - 80-90% of projects require some sort of correction – don't be surprised when you get an email!
  - Please respond promptly to reviewer emails. Sometimes multiple rounds of corrections will be needed.
  - Your SRC Reviewer will approve your project for competition once all corrections are complete
- **February 11<sup>th</sup>** – Final paperwork corrections due (along with virtual project materials)

# Common Paperwork Mistakes

- **Incomplete paperwork**
  - Double check your check boxes!
- **Incorrect Dates:** Most forms must be dated **prior** to when experiments are performed
  - **NOTE:** Forms 1C and 5B must be dated **after** Experimentation
- **Vague research plan**
- **Multiple Adult Sponsors:** The same adult must sign as the AS on all forms
- **Improper documentation of risk assessment and mitigation**
  - Don't forget form 3!
- **Animal research:** IACUC approval required **before** experimentation
- **Human research:** school IRB must approve research plan **before** experimentation begins
  - Participants 18 or above must give their **informed consent**
  - Participants under 18 must give **assent** and **parental written permission** may be needed as well

# 6. Get Fair Ready

FROM START TO SCIENCE FAIR	
LEARN MORE AT: CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR	
START NOW! IT'S NEVER TOO EARLY!	<b>Plan &amp; Prepare</b> <ul style="list-style-type: none"><li>• Identify your research question</li><li>• Find out what is already known</li><li>• Talk to subject matter experts</li></ul>
SEPTEMBER	<b>Get Involved</b> <ul style="list-style-type: none"><li>• Attend a kickoff event</li><li>• Register to participate</li><li>• Learn about fair rules and paperwork</li></ul>
	<b>Design Your Project</b> <ul style="list-style-type: none"><li>• Finalize your research question</li><li>• Plan your experimental procedures</li><li>• Obtain necessary pre-approvals</li></ul>
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- Work with the SRC to correct any errors in your project/paperwork submission. **FINAL CORRECTIONS DUE BY: FEBRUARY 11, 2022**
- Familiarize yourself with virtual and in-person *display and safety regulations*.
- Begin creating virtual AND physical display materials.  
**ONLINE MATERIAL SUBMISSION OPENS: FEBRUARY 1, 2022**  
**ALL MATERIALS MUST BE UPLOADED BY: FEBRUARY 11, 2022**
- Attend DMRSEF *Competition Ready Series SciComm events* and workshops to help prepare your materials.
- Practice presenting and answering questions to stay familiar with your project.
- Keep an eye on your inbox for Display and Safety approval or corrections needed on your virtual display materials.

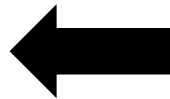
# Participate in the 59<sup>th</sup> annual DMRSEF

## FROM START TO SCIENCE FAIR

LEARN MORE AT:  
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DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!**



THE 59TH ANNUAL COORSTREK DENVER METRO  
REGIONAL SCIENCE AND ENGINEERING FAIR

**FEBRUARY 25 & 26, 2022**

*This is what a scientist looks like*

**DENVER SCIENCE FAIR**



# Supporting Student Researchers

**Where do you come in?**

**What makes for a successful Science Fair project?**

**How to motivate without overstepping?**



# Featured Example: Tyler Burt



[A Novel Mask Insert to Reduce Habitual Particle Transmission | CoorsTek Denver Metro Regional Science and Engineering Fair | Symposium by ForagerOne](#)

DENVER SCIENCE FAIR

# Important Dates to Remember

- **Late September:** Fair Registration opens for students
- **November 1<sup>st</sup>:** Paperwork uploads and project registration opens
- **January 7<sup>th</sup>:** Project registration and paperwork due!
- **February 1<sup>st</sup>:** Online student project material submission opens
- **February 11<sup>th</sup>:** Online student project material submission closes!
- **February 21<sup>st</sup>:** Symposium project portal open to judges for preview
- **February 25<sup>th</sup>:** Symposium projects go live!

*This is what a Scientist looks like*

# Questions?

<https://clas.ucdenver.edu/denversciencefair/>  
[Denversciencefair@ucdenver.edu](mailto:Denversciencefair@ucdenver.edu)

## DMRSEF



@DenverScienceFair



@DMRSEF



@DenverScienceFair



@Denver Science Fair (DMRSEF)



@DMRSEF

#DMRSEF #DenverScienceFair

*This is what a Scientist looks like*

DENVER SCIENCE FAIR



Want to Host a School/Local Fair

# ORGANIZING A LOCAL FAIR

## ▶ Science and Engineering Fair Planner:

- ▶ **STEP 1:** Determine goals
- ▶ **STEP 2:** Set a date
- ▶ **STEP 3:** Find a location/space
- ▶ **STEP 4:** Set registration deadlines
- ▶ **STEP 5:** Determine categories for competition
- ▶ **STEP 6:** Determine awards/certificates
- ▶ **STEP 7:** Fair Day Schedule
- ▶ **STEP 8:** Call for Judges/Volunteers

## ▶ Science and Engineering Fair Planner:

- ▶ **STEP 1:** What are your goals?
  - ▶ Positive experience
  - ▶ Improve science knowledge by implementing scientific method
  - ▶ Improve organization and communication skills
- ▶ **STEP 2:** Set a date
  - ▶ Find out the regional and state fair dates
  - ▶ ISEF is generally the first week of May
  - ▶ \*\*\* Tell students/teachers/parents \*\*\*
- ▶ **STEP 3:** Find a location/space to hold the Fair
  - ▶ Will need to have x # of 8'-tables, x # of chairs
  - ▶ Breakout rooms for judges
  - ▶ Registration/check-in area

# ORGANIZING A LOCAL FAIR

## ▶ Science and Engineering Fair Planner:

- ▶ **STEP 4:** Determine your registration deadlines
  - ▶ Keep in mind that DMRSEF online registration opens November 1<sup>st</sup>
  - ▶ The last day to register for DMRSEF is January 17<sup>th</sup> – **NO EXCEPTIONS!**
  - ▶ Paperwork corrections are due by February 21<sup>st</sup>
- ▶ **STEP 5:** Determine categories
- ▶ **STEP 6:** Determine awards/certificates
  - ▶ Fundraise for category awards
  - ▶ Ask companies/professional groups for special awards
  - ▶ Design certificates (participation and category winners)
  - ▶ Purchase ribbons for 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> places
  - ▶ Determine "Best in Fair" awards, if applicable

## ▶ Science and Engineering Fair Planner:

- ▶ **STEP 7:** Layout Fair Day Schedule
- ▶ **STEP 8:** Call for Judges/Volunteers
  - ▶ **Positions included**
    - ▶ Fair Set-up/Tear-down
    - ▶ Display and Safety Judges
    - ▶ First Aid Station
    - ▶ Judges & Judging Support
    - ▶ Photographer & Note Taker
    - ▶ Scientific Review Committee Assistant
    - ▶ Student Advocates & Surveyors
    - ▶ Translators
    - ▶ Wayfinders