THE AMERICAN COLLEGE OF SOFIA

SCIENCE FAIR and FISSION 2020

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Why a Science fair?

The Science Fair is an opportunity for curious, motivated students to investigate science topics that interest them. It is also a chance for students to share their thoughts, ideas and talents with the ACS student body, faculty and guests from outside the college. In the end, it is a learning experience for all, participants and spectators alike, and a celebration of the purest of pursuits – SCIENCE!

The first ACS Science Fair happened in the distant 1996 and ever since it was an event of sharing enthusiasm in knowledge bowls, challenges, and focusing on original student projects of two types – Models and Experiments.

What is FISSION?

FISSION is an international competition initiated and hosted by ACS students first in 2016. It is for students who are currently at their high school stage of education. Teams of up to two members create projects in one of two types (Experiment, Working Model) and in one of four categories based on their interests. FISSION aims to encourage inquiry-based learning in students, and take them beyond the limitations of classroom science. Mentored by one of their science teachers, they should come up with original and applicable solutions of relevant scientific issues, invent a novel device or a computer program, or demonstrate an interesting phenomenon in a new way.

ACS Science Fair and FISSION 2020

The school Science Fair 2019-2020 will be held on March 27 (Friday), 2020, on ACS campus. All projects will be evaluated by teachers from the Science department and the Math and Computer science departments. The projects will fall into the following

CATEGORIES

1. **Biomedical, Biological and Chemical Sciences**
2. **Computer Science**
3. **Mathematics**
4. **Ecology and Environmental Science**
5. **Physical Sciences and Engineering**

Every project within each category may be of one of the following **TYPES**

Experiment
Working Model

Who can participate?
Any ACS student (grades 8-12) may enter a project in the Science Fair. Students may work alone or collaborate in groups of 2 students. You may only submit one project.
Timeline – When do I have to get to work?

Date	Closing Time	Event
December 5th, 2019	31 January	**Form 1** Due to Science Fair 2020 G-Classroom
February 6-28th, 2020		**Consultations, lab work with your teacher supervisor!**

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March, 2020	5th March or earlier	Form 2 Due to Science Fair 2020 G-Classroom
March 16th, 2020 **(individual schedule TBA)**		**ACS project evaluation** Project judging: you will be assigned a place/room where to display the project and a time slot when your project will be judged.
March 16-26th, 2020		**Improvement** work on the Project as recommended by the Jury
March 27th, 2020		**ACS Science Fair**
March 27-28th, 2020		**FISSION** https://fission.acs.bg/index.html ● Project exhibition and evaluation by expert jury members ● STEM seminar ● Workshops in Sci Fi Center

What makes a good project?

There are two things you can do for the Science Fair.

1. Original Experiment   OR   2. Working Model

See the appropriate information packets about each type of entry to see which one you would like to do.

If you have an idea and are unsure if it will work, ask one of the science or math and computer science teachers!

It is impossible to state exactly what your project should be about. You will have the most fun – and probably be most successful – if you pick a topic you find very interesting.

To plan your project, we recommend that you consult the forms, deadlines and display requirements in the information packets for each type of submission (original experiment or working model). Eighth grade students can get guidelines from Mr. Ch. Youngs (Djerassi Hall, office room 306 or classroom 307).

How do I enter?

The Science department has found that having each participating student or group of students select a project supervisor who will guide them in the process of designing and executing a research project has resulted in high quality projects. You will be expected to select a project supervisor from any of the teachers in the Science department or Math and Computer science department.

ALL FORMS are NOW on **Science Fair 2020 G-Classroom** *and you can enter on line. Make sure to talk to the teacher supervisor and only if he/she has agreed, enter their names on the Forms.*

There will be two checkpoints before which you must talk to your advisor and demonstrate progress in your project. Each supervisor will provide after school time for work and consultation on students' projects. If you are not making adequate progress towards completing your project you may be eliminated from the competition. The checkpoint dates are December 5th, 2019 for the entry Form 1 and March 5th, 2020 for Form 2. More details about what must be done at each checkpoint are included in the separate project packets. (As on the previous page, the submission deadlines are the same for either project.)

All forms MAY be submitted early. We have noted the latest time by which each step should be completed.

Who will be my project supervisor?

The teachers who will help guide you in selecting and carrying out your experimental research or the design and constructing your model will be the teachers of ACS. You can also ask these teachers for help in selecting a topic.

If a teacher is already supervising too many projects, they can decline and refer you to another teacher.

How do I win?

Original experiments and working models will be evaluated as separate categories. All participants who successfully present their projects to the ACS jury will be awarded with 2 % bonuses, which will be given out in the form of coupons. These coupons can be used in any (but only one) science or math/computer course and the bonus percentage will be added towards your Semester II grade. The jury of each category will select the top ACS project/s which will be then presented at FISSION 2019 to compete with other students from different schools in Bulgaria and abroad. The evaluation results will be delivered to all participants soon after it and before Spring Break

How are projects evaluated?

The rubrics that will be used to evaluate your final project can be found on the ACS website in the other two packets – we highly recommend reviewing them! The point values assigned for projects is a confidential matter – after the Science Fair your project supervisor can tell you the areas of strength and weakness in your project but will not share the exact points earned for any projects.

*Projects which are incomplete or low quality on the day of evaluation will NOT get the bonus percentage and will not be presented at Science Fair.

Which ACS projects can participate in FISSION?

ACS teachers will determine the best projects during the evaluation on March 16, 2020. Authors will be notified that they are qualified for FISSION 2020!

At FISSION on March 28, 2020 an external jury will evaluate all projects and determine the winners in each category.

Where can I get ideas or help?

You will need to develop your project on your own time and with your own resources (specific equipment or chemicals can be requested on the application form, but will only be provided if they are available in the ACS science laboratories).

SCIFI center support

You can discuss with your supervisor the need of using the SCIFI center machines, devices and equipment. The teacher supervisor will contact and communicate your requests first. Then procedures of the SCIFI center will be followed as they get published at a later time in the year.

Safety and Ethics

Please use good judgment about working on projects that involve potentially dangerous materials. It is recommended you seek advice or supervision from an adult for projects that involve flammable materials, electrical devices, etc.
Experiments, which involve animals, are <u>NOT ALLOWED.</u>

Library resources:

ACS Library offers some books to help you get ideas for a project. Their titles are listed below:
1. **Bochinski, Julianne Blair**
   More Award-Winning Science Fair Projects.
2. **Bochinski, Julianne Blair**
   The Complete Handbook of Science Fair Projects.
3. **Bonnet, Bob; Keen, Dan**
   Science Fair Projects. Energy
4. **Bonnet, Bob; Keen, Dan**
   Science Fair Projects with Electricity & Electronics.
5. **Iritz, Maxine**
   Science Fair: Developing a Successful and Fun Project.
6. **Perry, Phyllis J.**
   Science Fair Success with Plants.
7. **Vancleave, Janice**
   Janice Vancleave's a + projects in earth science: winning experiments for science fairs and extra credit.
8. **Herr, Norman and James Cunningham**
   Hands-On Chemistry Activities with Real-Life Applications: Easy-to-Use Labs and Demonstrations for Grades 8-12.
9. **Cobb, Cathy & Monty L. Fetterolf**
   The Joy of Chemistry: The Amazing Science of Familiar Things.
10. **Gardner, Robert**
    Science Projects about Chemistry.
11. **Gardner, Robert**
    Science Projects about Kitchen Chemistry.

12. **Thompson, Robert Bruce**
    Illustrated Guide to Home Chemistry Experiments: All Lab, No Lecture.
13. **Stewart, Amy**
    Wicked Plants: The Weed that killed Lincoln's Mother and Other Botanical Atrocities.
14. **Gray, Theodore**
    The Elements: A Visual Exploration of Every Known Atom in the Universe.
15. **Kean, Sam**
    The Disappearing Spoon And Other Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements.

Specific Web Sites:

Here are a few websites that our Science faculty can recommend as a starting point for selecting a topic:

http://www.scifair.org	The Ultimate Science Fair Resource
http://school.discovery.com/sciencefaircentral/scifairstudio/	Science Fair Central: Science Fair Studio
http://www.sciencebuddies.org/	Science Buddies: Doing a Science Project?

In addition, the following sites were recommended in the document, "science-o-rama!: Great Minds at Work, Information Guide, Grades K-5, Tuesday, February 1st, 2005, Los Alamitos, California":

http://physics.usc.edu/ScienceFairs/	The WWW Virtual Library: Science Fairs
http://janus.astro.umd.edu/	The Astronomy Workshop
http://www.beakman.com/	Beakman & Jax do Science projects
http://www.wannalearn.com/	Source for online tutorials & learning
http://www.exploratorium.edu/snacks/snackintro.html	Exploratorium Science Snacks (projects)
http://www.howstuffworks.com/big.htm	Marshall Brain's PBS series: How Stuff Works (many project ideas)
http://pbskids.org/zoom/sci/	PBS Source site
http://www.sciencefriday.com/	Science Friday with Ira Flatow
http://www.stemnet.nf.ca/sciencefairs/	California Natural History Museum
http://www.ipl.org/div/kidspace/projectguide/	Your Science Fair Project Resource Guide
http://www.stemnet.nf.ca/sciencefairs/	Eastern Newfoundland Science Fairs Council

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Moreover, if you are specifically inspired to prepare an astronomy project, then you might find useful information visiting the web sites below:

http://www.nasa.gov/audience/forstudents/9-12/index.html	NASA Education for 9-12th grade students
http://skyserver.sdss.org/dr1/en/proj/	SkyServer projects
http://www.education.com/science-fair/astronomy/	Astronomy science fair projects
http://www.astrosociety.org/education/educational-resources/	Astronomical Society of the Pacific: Educational resources
http://www.grenfell.mun.ca/observatory/Pages/astronomy-links.aspx	Astronomy resources of Memorial University of Newfoundland, Canada
http://www.atnf.csiro.au/people/Robert.Hollow/astroed.html	Astronomy education resources and links

Internet
You can also do a simple search with the key words "Science Projects" in any search engine (Google, Bing, Yahoo, AltaVista, Ask Jeeves, Infoseek, etc.).

Now what? – What's the next step?
Look at the two other documents: **Experiment Guidelines and Rubrics** and **Model Guidelines and Rubrics**. They explain in detail the expectations and guidelines for the original experiment and working model.

Have fun and good luck!