The GSDSEF STEM Fair
Getting Started in the GSDSEF

• Teachers: By being here, you are now on the email list to receive information about 2019.

• Students: Make sure your teacher is on our email list.

• For 2019—possible changes could be: Teachers and students establish accounts for screening, applications, etc.
Who is Eligible for the GSDSEF?

- Any student at any 7-12 school—and home school—is eligible.

  **2 Divisions**
  - Junior (grades 7-8) – Individual projects only.
  - Senior (grades 9-12) - allows group projects with 2 students.

- Each year in San Diego and Imperial Counties, ~2,000-3,000 students do STEM projects.

- Of these, 600-800 are selected through a quality-based screening process to go on to the GSDSEF, held in March.

- California and International SEF are beyond that.
GSDSEF Timeline

• Students work on their projects from the beginning of the school year → Jan./February → class/school/district fair → Screening (if recommended) → GSDSEF in March
  – Screening- 10 slide digital presentation
  – Screeners give very specific information about improving projects.

• For the GSDSEF: Notebook and Backboard are required.

• GSDSEF takes place in mid-March at the Balboa Park Activity Center
Categories of STEM Projects

- Animal Sciences
- Behavioral and Social Sciences
- Biochemistry
- Chemistry
- Computer Science
- Earth & Planetary Science
- Engineering - Electrical & Mechanical
Categories of STEM Projects

• **Engineering** – Energy & Transport
• **Engineering** – Materials & Bioengineering
• Environmental Sciences & Management
• **Mathematical Sciences**
• Medicine and Health Sciences
• Microbiology
• Physics & Astronomy
• Plant Sciences
• **Product Testing/Consumer Science** (JUNIOR DIVISION ONLY)
Why do STEM Projects?

• Common core- Integration of Math, Science, and Writing
• NGSS- Next Generation Science Standards= Emphasize Science Practices and thinking like a scientist.
• STEM projects are applications of science/engineering principles in the real world.
## STEM Projects and NGSS

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<th>Science/Engineering/Computer Science Project Requirement</th>
<th>Science and Engineering Practice (NGSS)</th>
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<tr>
<td>Purpose or Problem Statement</td>
<td>Asking Questions (science) and Defining Problems (engineering); Planning Investigations</td>
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<tr>
<td>Hypothesis</td>
<td>Developing and Using Models; Constructing Explanations (prediction in science) and Designing Solutions (design iterations in engineering)</td>
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<tr>
<td>Research/Background Information</td>
<td>Obtaining, Evaluating, and Communicating Information</td>
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<tr>
<td>Procedure</td>
<td>Planning and Carrying out Investigations; Developing and Using Models (engineering iterations)</td>
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</table>
## STEM Projects and NGSS

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<tr>
<th>Science/Engineering/Computer Science Project Requirement</th>
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<tr>
<td>Results</td>
<td>Obtaining, Evaluating, and Communicating Information; Using Mathematics and Computational Thinking</td>
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<td>Conclusion</td>
<td>Analyzing and Interpreting Data; Engaging in Argument from Evidence; Constructing explanations (science) and Designing Solutions (engineering); Obtaining, Evaluating, and Communicating Information.</td>
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<td>Abstract</td>
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**Abstract**

Communicating Information (summary)
Why do STEM Projects?

- THEY’RE A BIG PLUS ON COLLEGE, SCHOLARSHIP AND JOB APPLICATIONS —

- Portfolio of a student’s skills in Technology, Art, Mathematics, Writing, Oral Presentation, and of course---- Science or Engineering or Computer Science.

- THEY PROVIDE STUDENTS THE OPPORTUNITY TO:
  - Conduct their own independent research on a topic they are interested in. They ‘get to’ do a project.
  - Utilize scientific method/ build and test engineering designs
  - Give oral presentations and defend their work

—An experience students will remember for a lifetime.
Role of the Teacher

- Projects can be required or optional (In some Honors level classes, they are required.)
- Introduces project as a POSITIVE ASSIGNMENT students GET TO DO: Students pick their OWN projects and tell the teachers what they want to do.
- Helps students narrow their focus on project topics.
  - “What is the effect of ____________ on ____________?”
- Establishes Due Dates between July and February.
- Orders materials for students.
- Informs Parents about Project Requirements.
Role of the Student

• Picks a project which is feasible, affordable, and interesting to him/her.
• Works on their projects at home, school, or lab
• Meets all the deadlines established by the teacher
• Produces a notebook and backboard to present at classroom/school/District Science Fair.
The Notebook

• After gathering data, students write their findings in a notebook.
• Notebook includes: Problem Statement
  • Background Research
  • Hypothesis (if necessary)
  • Materials and Procedures
  • Data/Results
  • Conclusion
  • Bibliography
The Backboard

• Actual Backboard
At the GSDSEF

• During the Fair, judges ask students about their projects.
• Students use their notebooks and backboards as props to explain their projects to the judges.
• Place Awards are given for all Level Projects: 1\textsuperscript{st}-4\textsuperscript{th}
• There are numerous Professional Society Awards and Corporate sponsored awards
• Sweepstakes- Best projects in Life and Physical Sciences in Junior and Senior Division.
GSDSEF Website

Gsdsef.org

- Student tab and Teacher tab for Resources and e-Advice
- SAB tab for Student Workshops
The Science Fair Experience:

Greater San Diego Science & Engineering Fair 2018
Check In and Project Set Up Day

Balboa Park Activity Center (BPAC)
Judging Day
Judging Day