



PARAGON
SCIENCES

MIDDLE & HIGH SCHOOL TRACK · SYLLABUS

Young Scientists Bootcamp

Seven weeks. One real research project. From curious student to young scientist.

FORMAT

Virtual · 7 weekly live sessions

AGES

12–18, in two age-matched cohorts

DATES

TBD · starting early 2027

COHORT SIZE

About 15 students

LANGUAGE

English, with Arabic support

CAPSTONE

Research poster + 7-minute talk

HOW THE PROGRAM WORKS

This is a build, not a lecture series

From the first session, every student works toward one goal: their own research project, presented at the Session 7 competition as a science-fair-style poster and a 7-minute talk.

Each session produces one concrete piece of that project, and each weekly assignment is the next stage of it. A student who completes all six assignments arrives at the competition with a finished, defensible piece of work they can keep developing after the bootcamp.

1 Mini-study

A small original investigation using a home experiment, a survey, or a public dataset.

2 Research proposal

A rigorously designed study the student argues should be done, grounded in real scientific literature.

Students choose the project type that fits their interests and access to resources. Both are legitimate science, and both can be taken further into science fairs, journals, and summer programs.

TWO COHORTS, ONE ARC

Learning alongside peers their own age

Ages 12–15

Grades 7–9

Ages 16–18

Grades 10–12

Both cohorts follow the same seven-session arc and produce the same capstone. Instructors adjust depth, examples, and pacing to each age group.

SCHEDULE AT A GLANCE

Seven sessions, six milestones, one project

WEEK	SESSION	CAPSTONE MILESTONE
1	What is science, actually?	A domain of curiosity
2	Asking a good question	One testable question + sources
3	Designing the study	A study design
4	Evidence and data	A data plan + first figure
5	Communicating science	Poster draft v1
6	Project workshop	Final poster + rehearsed talk
7	Presentation competition	Final presentation

Session dates will be announced when the cohort calendar is confirmed. Enrolled students receive a detailed syllabus with weekly assignments and the judging rubric.

SESSION BY SESSION

What happens each week

01 What is science, actually?

Milestone: a domain of curiosity

BY THE END, STUDENTS CAN

- Describe the scientific method and point to where real research departs from the textbook version.
- Explain why scientific research matters, locally and globally.
- Describe where this bootcamp leads: competitions, publications, and further research.
- Name a personal domain of curiosity to anchor their project.

WE COVER

What research actually is; the messy reality behind clean textbook diagrams; deconstructing a real discovery story; why research is worth doing.

02 Asking a good question

Milestone: one testable question

BY THE END, STUDENTS CAN

- Tell an answerable research question from one that isn't.
- Use structured brainstorming methods: rapid ideation, mind mapping, and question lists.
- Use AI responsibly as a brainstorming partner.
- Turn a brainstorm into a testable hypothesis.
- Run a basic literature search in Google Scholar and PubMed and find peer-reviewed papers.

WE COVER

Making a question answerable; the anatomy of a hypothesis; searching the literature; reading an abstract without drowning; what "peer-reviewed" means and why it matters.

03 Designing the study

Milestone: a study design

BY THE END, STUDENTS CAN

- Distinguish observational from experimental design and justify their choice.
- Define the independent, dependent, and controlled variables for their own question.
- Spot confounders, build intuition for sample size, and name the ethical issues in their project.

WE COVER

Variables and controls; observational vs. experimental design; confounders and how to handle them; why sample size matters; research ethics, especially for studies involving people.

04 Evidence and data

Milestone: data plan + first figure

BY THE END, STUDENTS CAN

- Explain what counts as evidence, and tell correlation apart from causation.
- Source or collect data (home experiment, survey, or public dataset) and compute basic descriptive statistics: mean, median, and spread.
- Read a graph critically and recognize common errors and bias.

WE COVER

What evidence is and isn't; ways to get data without a lab; descriptive statistics in plain language; building and reading graphs; misleading charts and how bias sneaks in.

05 Communicating science

Milestone: poster draft v1

BY THE END, STUDENTS CAN

- Lay out a science-fair poster with the standard sections: background, question, methods, results, conclusion.
- Structure a 5–7 minute research talk.
- Anticipate and answer judge-style questions.

WE COVER

The anatomy of a science-fair poster; writing each section tightly; structuring a short talk; how judges think and the questions they ask.

06 Project workshop

Milestone: final poster + rehearsed talk

BY THE END, STUDENTS CAN

- Present work in progress clearly and take critique professionally.
- Give specific, constructive feedback to a peer.
- Revise a poster and talk based on what they heard.

FORMAT

A working session with no new content: small-group presentations, structured instructor and peer feedback, and live revision.

07 Presentation competition

Final presentation

BY THE END, STUDENTS CAN

- Deliver a 7-minute research presentation to an audience and judges.
- Field questions under light pressure.
- Name concrete next steps for taking their project further.

FORMAT

Each student gives a 7-minute presentation followed by judges' questions. Top projects receive Distinction certificates and priority access to follow-on competition mentoring.

WHERE STUDENTS GO NEXT

Strong projects can be developed for science fairs (ISEF-affiliated and regional), middle and high school research journals, and summer research programs.

EXPECTATIONS & SUPPORT

Policies for students and families

Assignments

Each assignment is a stage of the final project, so keeping up matters. Students may miss **up to three assignments**, and only with advance notice to their instructor. A student who misses more than three assignments, or misses one without notice, will be removed from the bootcamp.

Attendance

Students are expected to attend every live session. If you can't make a session, tell your instructor beforehand and review the materials posted in the student portal.

Parent Support

Parents and guardians can opt into Parent Support to follow their child's performance throughout the bootcamp, including attendance, assignment progress, and instructor feedback, with updates sent by email or WhatsApp, whichever you prefer. Ask for it when you register or email info@paragon-sciences.com.

Using AI tools

We teach students to use AI tools like Gemini and NotebookLM to brainstorm and to understand papers. The question, design, analysis, and words in the final project must be the student's own.

Recognition

Every student who completes the bootcamp receives a certificate of completion. Top projects at the Session 7 competition earn a Distinction certificate and priority access to follow-on competition mentoring.

What you'll need

A computer with a stable internet connection, a Google account for Gemini and NotebookLM (set up by a parent for students under 13), and a notebook for in-session activities.

Questions? We're here to help.

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Tuition by country & financial aid:

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