BESTROBOTICS
BOOSTING ENGINEERING SCIENCE & TECHNOLOGY

Spring/Summer Activities

bESTology — BEST ROBOTICS
THE STUDY OF ENGINEERING, SCIENCE & TECHNOLOGY

Feb 19 – Apr 21

bESTology is our weekly education series of research/activity lessons that is designed to educate students on an array of topics related to the annual industry theme or problem. Each lesson involves research, reflection, writing, creative activity, community connection, and BEST connection. Each lesson is developed around Bloom's taxonomy.

- Weekly research/activity lessons on annual game theme topics and real-world industry connections.
- 100% online activity.
- Team or Individual participation; fun activities.
- Focuses on research, reading comprehension, writing, & a creative activity.
- Blooms Taxonomy & Workforce Skills noted on each lesson.

What's New? Some new features will be available in bESTology this year to improve student engagement through interactive functionality and gamification. Students that login with their BEST account (avatar/password) will see the following new features:

- Online Journal – capture your research and other journaling tasks right in the system, on the same page as the weekly lesson.
- Gamification – collect points and badges for participating in bESTology activities.
- Create & Share – use BEST Photos site (#BESTOLOGY2024) to share the results of your bESTology creative tasks. A link to the photo gallery is available in the page side bar.

Participate starting February 19th at https://bestology.bestrobotics.org

The BEST IQ Challenge tests your skills in mathematics, science, and engineering, by combining these skills with software coding skills using MathWorks MATLAB. Through this challenge you will sharpen your coding skills along with your technical skills.

- The challenge is open to anyone but only students are eligible for the leaderboard.
- Solve problems of your own choosing at your own pace.
- Earn points for each correct solution. Earn bonus points and badges for specific accomplishments (e.g., first to solve, best overall solution, solving all problems) and for improving your solutions over time.
- Submit solutions as many times as desired. There is no penalty for incorrect solutions.
- Earn badges and rise to the top of the leaderboard by solving more problems than your BEST friends and competitors.
- Earn national recognition as having the BEST IQ in the nation, capture the national award and other MathWorks swag!

What's New? A brand-new set of problems is coming for the Spring challenge. More challenging. Expanded programming.

```
1  function c = combine_pixels (a,b)
2    if a >= b
3        c = xor_bits(a,b);
4    else %a < b
5        c = a+2*b;
6    end
7  end
8
9  function d = xor_bits(x,y)
10    d = xor(x,y);
11 end
```

The BESTiq Challenge Kickoff is scheduled for February 28th. Look for the announcement in your inbox! Students, register to participate in this program on your student profile page in the BEST National Registry.

In the Autonomous Programming Challenge, Students are asked to write and demonstrate autonomous programs for a virtual robot within a 3D simulated environment to accomplish various tasks. The challenge is built around Mathworks Robotics Playground 3D virtual environment and is designed to be very similar in concept and objectives as a physical competition. What makes this challenge unique is that students are performing actual simulations of the robot (hardware and software) and its environment; this is not a video game.

- Any student can participate in the Autonomous Programming Challenge regardless of their past involvement.
- The challenge is open to teams or individual students.
- Self-paced activity over a 6-week period.
- New this year: Mini-Drone Challenge & 3 BEST robot challenges (OutBreak!, Demo Daze, Made2Order)
- The challenges may include incremental phases, each with unique objectives and increasing difficulty.
- Students may complete any or all challenges & phases at their discretion.

Register to participate in this program on your student profile page in the BEST National Registry.


Featuring **NEW**
Mini-drone challenge

Jun 9 – Jul 14

The BEST Minecraft Challenge (by UTD) is designed to explore students' problem-solving and creativity skills through a uniquely designed scenario within the popular *Minecraft* gaming platform. In *Minecraft*, players explore a blocky, three-dimensional world with virtually infinite terrain and may discover and extract raw materials, craft tools and items, and build structures, earthworks, and machines. The BEST Minecraft Challenge is built upon the UTD Polycraft World, a comprehensive Minecraft mod with a focus on science, chemistry, materials science, and engineering.

- Any students may participate and join a team of their peers.
- Work individually or as a team to complete all tasks.
- Self-paced over 6 weeks.

Students were charged with mining chemicals, producing a vaccine, and vaccinating as many people as possible.
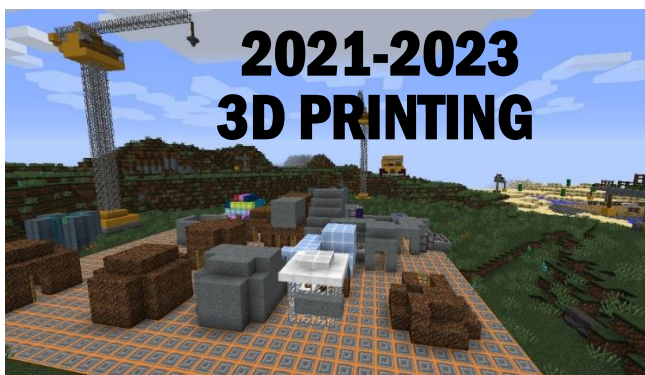
Students were asked to use 3D Printers, Scanners, and recycled materials, to build a refugee village with 3D printed houses and community buildings and to advance their village from dirt huts to carbon fiber condos.

The Minecraft Challenge Kickoff will be held on June 9th! Registration opens May 4th.

Register to participate in this program on your student profile page in the BEST National Registry.

![PRUSA RESEARCH by JOSEF PRUSA — BEST 3DP CHALLENGE logo] **Jun 2 – Jul 28**

The Prusa 3D Printing Challenge is designed to test your 3D printing design and fabrication skills.

BEST has joined forces with PRUSA printers to create an amazing 3D printer challenge. This national level themed challenge is open to any team (or student) with a chance to win a PRUSA i3 MK3S+ 3D printer for your own classroom! You will be presented with a problem to solve with a 3D printed design. Research, brainstorm, design it, slice it, 3D print it, then upload your results to Prusa printables website.
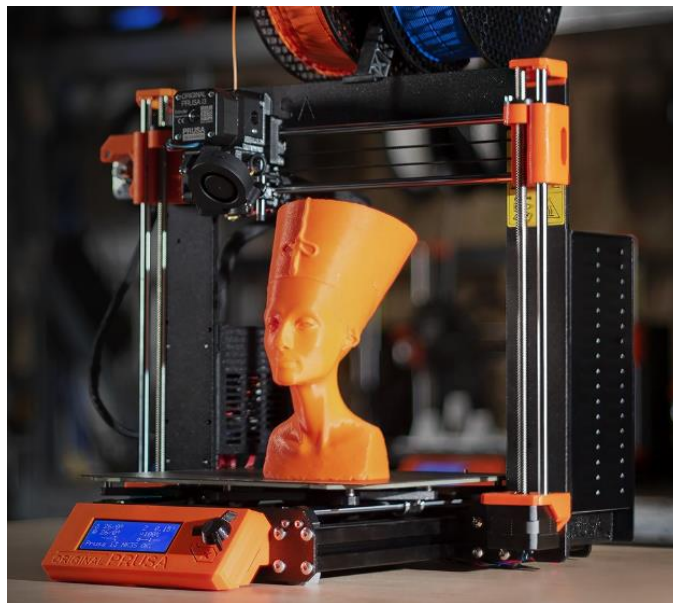
☹ But my school has no 3D Printers…

- No worries. We are recruiting schools in your area willing to help support your 3D printing needs. See the challenge rules for details on your options.
- If you are a school with 3D print capability and willing to help schools in your local area, PLEASE check the box on your Team Workflow *Team Information* panel.

Registration opens May 20ᵗʰ, 2024.

See the 2023 challenge submissions here.

Feb 11 – Aug 31

BESTography is a series of photo sharing campaigns that challenges participants to capture and post images related to the BEST program and a particular campaign theme. It's fun, it's year-round, it's a competition! Anyone can participate, any time, any place. Simply upload your photos with the campaign hashtag to the BEST Photos site. Reviewers determine the appropriateness of your photos vs. the campaign theme and post them to the campaign gallery. Win cool prizes for the highest number of approved posts during a campaign period.

- Multiple campaigns run in parallel.
- Campaigns are uniquely selected to increase your awareness, enhance your photography skills, and challenge your creativity.
- Computer and mobile friendly.

What's New? New campaigns. See the hashtags below.

#LOWG2024   **#EARTHROCKS**   **#FLYTHESKY**   **#FINDINGBEST**

Participate at https://best30th.bestrobotics.org/bestography/

Just follow the QR code to start posting today.

May 8, 2024

A live stream panel discussion between BEST students and a panel of industry, higher education, and BEST Robotics leaders, with an intended focus on the future, careers, technology, the workplace, skills, etc. Targeting high school juniors and seniors, students prepare and pose their questions in the live setting to seed the discussions. A moderator will guide the discussions. What are the next big challenges students will face in their lifetime? What is the next industry work environment going to look like? What can students do to prepare?

The nextBEST Industry Forum is scheduled for **May 8th, 2024, 7pm Central**.

Students, register to participate on your profile page in the BEST National Registry.

May 22 – Jun 26

MATLAB & Simulink Training

A series of trainings and workshops in collaboration with our National partner Mathworks which instructs students in the use of MATLAB and Simulink to program their robots. All training and workshops are held online. Check the BEST Training Calendar for specific dates and times. Training begins in February!

- Basics of Programming
- MATLAB Workshop (2-day)
- MATLAB Mondays Q&A Sessions
- Simulink Workshop (Weekly, for 6-weeks)
- Robot Autonomy Programming
- Robot Modeling with Simscape™

See the **BEST Training Calendar** for specific webinar dates and registration

Jun 5 – Jul 10

Computer Aided Design Training Series

A new 6-week series on 3D solid modeling using Computer Aided Design (CAD) tools. Come learn the basics of solid modeling, creating parts and assemblies.

See the **BEST Training Calendar** for specific webinar dates and registration