



**Student Activities Conferences 2023**

# Branching Out With STEM for 2023-2024

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# UIL STEM Contests

High School	A+ Academics
<p>The Core Four:</p> <ul style="list-style-type: none"><li>• Calculator Applications</li><li>• Mathematics</li><li>• Number Sense</li><li>• Science</li></ul> <p>Plus</p> <ul style="list-style-type: none"><li>• Computer Science</li><li>• Robotics</li></ul>	<ul style="list-style-type: none"><li>• Calculator Applications Grades 6-8</li><li>• Mathematics Grades 6-8</li><li>• Number Sense Grades 4-8</li><li>• Science Grades 6-8</li></ul>

Strong A+ programs build strong high school programs!

# Planning for a successful 2023-2024

- ▶ Start early
  - ▶ Materials and equipment needs
  - ▶ Plan for additional training opportunities
  - ▶ Plan for invitational and practice meets
  - ▶ Participate in your District Meet planning process
- ▶ Engage your school community
  - ▶ Share responsibilities with your colleagues, and your students
  - ▶ Don't be afraid to ask for support from parents and others in your community
- ▶ 6 entries at District - updated this year

# Math and Science Resources

- ▶ [Contest Handbooks](#) - contest rules and procedures (*updated versions by Aug. 1*)
- ▶ [UIL Online Store - Test Archive](#)
  - ▶ [Calculator Applications Practice Manuals](#)
- ▶ [UIL Conferences YouTube Channel](#)
- ▶ [Invitational Meets](#)
- ▶ [Texas Math and Science Coaches Association](#)
- ▶ [Independent Vendors](#)
- ▶ Physics Study Text
  - ▶ *Five Equations that Changed the World: The Power and Poetry of Mathematics*, by Dr. Michael Guillen (ISBN 9780786881871)
    - ▶ Available from [Texas Educational Paperbacks](#) and most online booksellers
- ▶ [Science Approved Calculator List](#)

# Computer Science Contest

- ▶ 45 minute 40 question multiple choice exam

## PLUS

- ▶ 2 hour hands-on programming contest for teams
- ▶ The same students participate in both components
- ▶ Challenges students to apply programming concepts and skills, as well as their knowledge of the Java programming language
- ▶ Parallels the AP Computer Science curriculum
- ▶ [Detailed topic list on UIL website](#)

# Computer Science Resources

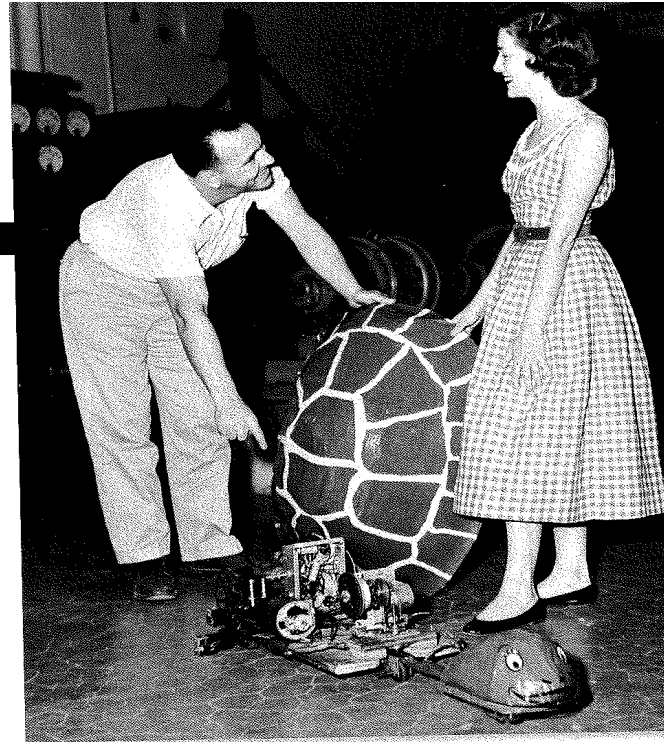
- ▶ [UIL Online Store - Test Archive](#)
- ▶ [UIL CS Resource Page](#)
  - ▶ Links for Java Tutorials
  - ▶ Software Information
  - ▶ Links for Online Programming Practice Resources
- ▶ [UIL Conferences YouTube Channel](#)
- ▶ [Invitational Meets](#)
- ▶ [Independent Vendors](#)

# Computer Science Resources for Teachers

- ▶ [Code.org](#)
  - ▶ Curriculum, study and practice resources for all grade levels
- ▶ [WeTeach\\_CS](#)
  - ▶ Free and low-cost CS curriculum
  - ▶ Professional development opportunities
  - ▶ Incentives for CS certification
  - ▶ Previous Computer Science background not required

# Robotics Recap

## The Early Years?



### Turtle Power

**T**HERE'S NO EVIDENCE TO SUGGEST THAT THE INHABITANTS OF Turtle Pond ever met Tessie, a giant mechanical Franken-turtle built at UT in 1954, but at roughly 4 feet long and 3 feet wide, Tessie was surely big enough to fill UT's flesh-and-bone reptile populace with Vader-esque feelings of dread.

Perhaps Tessie's friendly eyes and generous smile painted atop her papier-mâché head would have been enough to dispel any foreboding. If not, a quick glance underneath the hood—or shell—would reveal her to be little more than a mass of wires and motors.

Though the reasoning behind the turtle's construction is lost to history, Tessie was built by

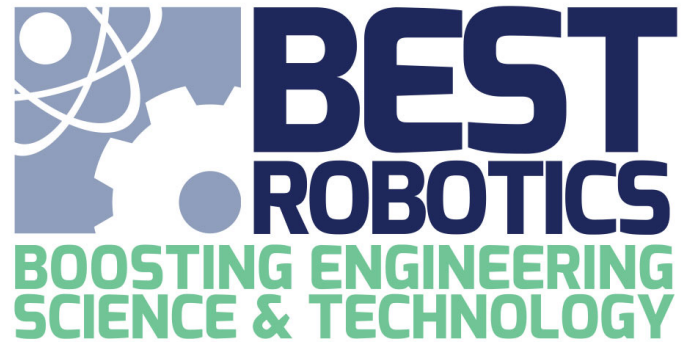
Arthur W. Ivy, BS '54, and displayed at the University Interscholastic League's 45th All-University Exposition and Power Show. Among the creations accompanying Tessie at the annual exhibit of future scientific feats was an electronic tic-tac-toe player named George, constructed out of disused pinball machines. —Ben Wright

CREDIT: University Interscholastic League Records, Briscoe Center, UT-Austin



# Robotics Program Structure

- ▶ UIL Robotics is a collaboration



# Robotics Program Structure

- ▶ Three Divisions, each with UIL State Championships
  - ▶ BEST Division (fall season, early December championship event)
  - ▶ FIRST Division
    - ▶ FTC (fall/spring season, March/April championship event)
    - ▶ FRC (spring season, April championship event)
  - ▶ RECF-VEX Division (fall/spring season, February championship event)
    - ▶ Continues as a pilot program for 2023-2024, official status in 2024-2025 pending final UIL Legislative Council approval
- ▶ Your school can compete in any or all UIL divisions
- ▶ More schools are including multiple competition platforms in their robotics programs

# Which Program to Choose?

## Some Factors to Consider...

- ▶ Scheduling
  - ▶ BEST - compact fall season (UIL championship in December)
  - ▶ FRC - compact spring season (UIL championship in April)
  - ▶ FTC - spread out season (UIL championship in March/April)
  - ▶ VEX - spread out season (UIL championship in February)
- ▶ Cost and available resources
  - ▶ BEST, FTC and VEX are relatively comparable in cost, FRC costs more
  - ▶ Lots of variables - available facilities/equipment, travel considerations, etc.
- ▶ Personnel
  - ▶ What is the best fit for the educator(s) who will be working with the robotics program at my school?

# Which Program to Choose?

## Some Factors to Consider...

- ▶ Educational focus
  - ▶ In general, BEST and FRC will include a heavier engineering component, while FTC and VEX incorporate more programming
  - ▶ BEST - build from raw materials
  - ▶ FRC - build with higher-end machining
  - ▶ FTC and VEX - build from prefabricated parts
- ▶ Additional competition elements
  - ▶ Presentations, engineering notebooks, etc.

# Robotics Resources

- ▶ BEST, FIRST, RECF-VEX
  - ▶ [www.bestrobotics.org](http://www.bestrobotics.org)
  - ▶ [www.firstinspires.org](http://www.firstinspires.org)
  - ▶ [www.roboticseducation.org](http://www.roboticseducation.org)
- ▶ Texas affiliates will help you get started and connect with local contacts
  - ▶ [www.bestoftexasrobotics.org](http://www.bestoftexasrobotics.org)
  - ▶ [www.firstintexas.org](http://www.firstintexas.org)
  - ▶ [RECF Texas contacts](https://www.robotevents.com/support) (https://www.robotevents.com/support)

# STEM - Strength in Numbers

- ▶ UIL STEM Activities
  - ▶ Provide numerous participation options for students
  - ▶ Promote college and career readiness for in-demand STEM fields
  - ▶ Offer multiple pathways to TILF scholarship eligibility
  - ▶ Build and reinforce one another
  - ▶ Offer many ways to earn points for your school

# Looking Ahead

- ▶ Robotics
  - ▶ Continued growth and expansion opportunities
- ▶ Unified Robotics
  - ▶ Currently offered in UIL Robotics - BEST Division
  - ▶ Must be a Unified Champion School registered with Special Olympics Texas
- ▶ Drones
  - ▶ Currently being studied with a superintendent survey
- ▶ eSports
  - ▶ Continuing to monitor - no plan for implementation at this time

# Questions

