Every attempt has been made to insure these are the current rules; however, the only official rules are those published in the Coaches and Student Manuals. In case of discrepancy, the rules in those manuals take precedence.

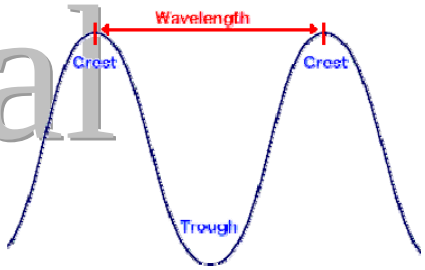
CRAVE THE WAVE

1. **DESCRIPTION**: In this event students will demonstrate knowledge and process skills needed to solve problems and answer questions regarding all types and areas of waves and wave motion.

2. **EVENT PARAMETERS**: Scientific calculators are permitted. A resource binder is permitted. All papers must be secured in a 3-ring binder, they must be 3-hole punched and inserted in the binder so that regardless of orientation none can fall out. The binder and all papers must be able to fit into a 3" x 12" x 12" box without compression from students or judges.

   A TEAM OF UP TO: 2 **APPROXIMATE TIME**: 50 minutes

3. **THE COMPETITION**: Students will be presented with questions and hands-on tasks at stations requiring them to draw and label diagrams to demonstrate knowledge of introductory concepts, record observations, make predictions, interpret data, generate inferences, solve problems, formulate and evaluate hypotheses. Tests will include all topics. Topics are divided into regional (R), state (S), and national (N) and will include questions or activities from the following areas:



a. General Wave Characteristics	(R):	Wavelength, amplitude, frequency, period.
b. Wave Types	(R):	Transverse, longitudinal, surface, torsional waves.
c. Wave Phenomenon	(R):	Sound & Light: reflection, standing waves, constructive and destructive interference, refraction, effect of media, diffraction, Doppler Effect.
d. Electromagnetic Waves:	(R):	Electromagnetic spectrum, relationship between frequency and wavelength, energy carried (AM/FM only), standard wavelength bands, their uses and dangers.
e. Spectroscopy:	(R):	Primary colors of light
	(S):	Absorption spectra, primary colors of pigments, emission spectra.
f. Earthquake/Seismic Waves	(S):	P/S-waves, Rayleigh waves, Love waves, surface waves.
g. Boundary Effects	(N):	Breaking ocean waves, Tsunamis.

4. **SAMPLE ACTIVITIES**: (Regional level) Label the parts of a wave, determine frequency, period or wavelength of a wave; determine the angle of refraction of a prism; measure and label the angle of incidence, the angle of reflection and the normal on a mirror; listen to a recording and determine whether a truck is moving towards or away from you; given pictures of items or places identify the type of light used to take these pictures; given papers with colored circles and a flashlight hidden inside a black box, determine the color of the filter over the flashlight; using a recording of two trucks determine which one is moving faster; given graphs of two waves draw the resulting wave (interference); (State level) given p-wave and s-wave diagrams determine the distance to the epicenter; (National level) measure the width of a hair using a laser; label and describe the action of a breaking wave and the environmental impact when these waves increase during storm surges.

5. **SCORING**: Points will be awarded for the accuracy and quality of the responses. Ties will be broken using pre-selected questions.