

MODEL THIS! (Division B) Epidemic Challenge

1. **DESCRIPTION:** This event integrates computer technology, the Internet, quantitative data analysis and computer modeling. Teams are presented with a problem that requires modifying or creating a computer model that will represent the scenario presented. Short answer questions related to the problem are also included.

A TEAM OF UP TO: 2

APPROXIMATE TIME: 50 Minutes

2. **EVENT PARAMETERS:** No resource materials or calculators may be used during the competition. Blank tablet paper and writing instruments may be used to assist teams in organizing their thoughts, if desired. Prior to the event, teams may construct their own publicly accessible (non-password protected) websites to organize URL links and reference information for use during the competition. Teams may also freely access any publicly accessible www site or search (e.g., Google or others) to locate information about modeling using any or all of the tools listed below and sample models. However, during the event, no external communication is permitted with other individuals via e-mail, chat rooms, or other forms of collaborative computing; the penalty for an infraction of this nature will be immediate disqualification.
3. **EVENT PREPARATION:** The recent outbreak of the swine flu virus has exposed several weaknesses in the world's ability to respond to the sudden emergence of a widespread illness. Computer models can be used to test prevention and treatment strategies with normal and at-risk populations. For background information about the swine flu, see http://topics.nytimes.com/top/reference/timestopics/subjects/i/influenza/swine_influenza/index.html), http://www.nytimes.com/2009/08/11/health/11docs.html?_r=1, <http://flutracker.rhizalabs.com/>, and <http://www.sciencedaily.com/releases/2009/05/090511151620.htm>.

Prior to the competition, students should download NetLogo from <http://ccl.northwestern.edu/netlogo/>. The NetLogo Models Library has a variety of disease models that will help the students prepare for the competition.

4. **THE COMPETITION:**
 - a. During the competition, each team will be provided with a single Windows OS PC with word processing (MS Word), spreadsheet (MS Excel), WWW browser (MS Explorer), modeling software (NetLogo and VenSIMPLE) and Internet access.
 - b. Teams will be given information about an air-borne disease and all required information will be located on web sites supplied at the time of the competition.
 - c. The problem statement will require the development of an original or modification of an existing disease model to reflect the specific disease information supplied during the competition.
 - d. The problem statement will include up to five (5) short answer questions. Questions may involve discussion of assumptions or simplifications made in the model.
 - e. Teams will construct an MS Word (.doc) file that contains the answers and evidence associated with the short answer questions. The event supervisor will specify how these files are to be submitted at the conclusion of the event. Teams should include their school name and team number (as appropriate) within both files to ensure proper identification by the event supervisor.
5. **SCORING:** High score wins will be based on the logic behind the model developed, the clarity of the explanations, and the comprehension of the model features and limitations as evidenced by the answers to the five questions.