

2012 GSDSEF Category Descriptions

These Category descriptions have been adapted from the Intel ISEF Handbook. Final project placement will be determined by the Scientific Review Committee.

1. Animal Sciences – Study of animal behavior, classification, development, pathology, taxonomy; animal ecology, animal genetics, animal husbandry, circadian rhythms, cytology, entomology, herpetology, histology, ichthyology, ornithology, paleontology, physiology, studies of invertebrates, etc.
2. Behavioral and Social Sciences – Human behavior, social and community relationships; anthropology, archaeology, circadian rhythms, educational testing, ethnology, learning, linguistics, perception, psychology, sociology, urban issues, etc.
3. Biochemistry – Chemistry of life processes; enzymes, food chemistry, hormones, metabolism, molecular biology, molecular genetics, photosynthesis, protein chemistry, etc.
4. Chemistry – Study of nature and composition of matter and laws governing it; fuels; inorganic chemistry, organic chemistry (other than biochemistry), physical chemistry; materials, metallurgy, pesticides, plastics, soil chemistry, etc.
5. Computer Science – Study and development of computer hardware; programming languages; networking and communications; robotics control systems; simulations/virtual reality or computations science (including data structures, encryption, coding and information theory); algorithms, artificial intelligence, data bases, graphics, software engineering, etc.
6. Earth & Planetary Science – Climatology, geography, geology, geophysics, meteorology, mineralogy, oceanography, paleontology, physiography, seismology, speleology, tectonics, etc.
7. Engineering – Electrical & Mechanical – Computer engineering, controls, electrical engineering, mechanical engineering, robot mechanics, solar electric generation, thermodynamics, etc.
8. Engineering – Energy & Transport – Aerodynamics, aerospace and aeronautical engineering, alternative fuels, automotive & marine vehicle development, fossil fuel energy, heating & refrigeration, renewable energies, solar heating, wind energy, etc.
9. Engineering – Materials & Bioengineering – Acoustics, bioengineering, civil & construction engineering, chemical engineering, environmental engineering, ergonomics, industrial engineering & processing, material science, etc.

10. Environmental Sciences & Management – Air pollution and air quality, bioremediation (i.e., oil spill cleanup, etc.), ecology, ecosystems management, environmental engineering, land resource management, forestry, recycling, waste management, soil contamination and soil quality, water pollution and water quality, etc.
11. Mathematical Sciences – Science of numbers and their operations; algorithms, development of formal logical systems or various numerical and algebraic computations and the application of these principles; algebra, calculus, complex analysis, geometry, number theory, probability, statistics, etc.
12. Medicine and Health Sciences – Study of diseases and health of humans; allergies, cellular & molecular biology, dermatology, dentistry, epidemiology, genetics, immunology, nutrition, ophthalmology, pathology, pediatrics, pharmacology, physiology, sanitation, speech and hearing, etc.
13. Microbiology – Biology of microorganisms; antibiotics/microbials, bacterial genetics, bacteriology, fungi, molds, protozoology, virology, yeast, etc.
14. Physics & Astronomy – Theories, principles and laws governing energy and the effect of energy on matter; acoustics; atoms, molecules, nuclear, plasma, solids; biophysics; fluid and gas dynamics; instrumentation and electronics; magnetism; optics, lasers, masers; particle, quantum mechanics; semiconductors, solid state, superconductivity, thermodynamics; theoretical or computational astronomy, planetary science, etc.
15. Plant Sciences - Study of plant life; agriculture/agronomy, algae, circadian rhythms, ecology, forestry, horticulture, hydroponics, plant evolution, plant genetics, plant pathology, plant physiology, plant taxonomy, etc.
16. Product Testing/Consumer Science (JUNIOR DIVISION ONLY) – Quality control, comparison studies of product designs; using accepted scientific tests to obtain quantifiable results, etc.