

2019 IM²C

Problem: What is the Earth's *carrying capacity* for human life?

1. Identify and analyze the major factors that you consider crucial to limiting the Earth's carrying capacity for human life under current conditions.
2. Use mathematical modeling to determine the current carrying capacity of the Earth for human life under today's conditions and technology.
3. What can mankind realistically do to raise the carrying capacity of the Earth for human life in perceived or anticipated future conditions? What would those conditions be?

Note that IM²C is aware of available resources and references that address and discuss this question. It is not sufficient to simply re-present any of these models or discussions, even if properly cited. Any successful paper must include development and analysis of your model.

Your submission should consist of:

- One-page Summary Sheet.
- Your solution of no more than 20 pages, for a maximum of 21 pages with your summary.
- A complete list of references with in-text citations.
- **Note: Reference list and any appendices do not count toward the 21-page limit and should appear after your completed solution.**

Glossary:

Carrying Capacity: The carrying capacity of a biological species in an environment is the maximum population size of the species that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.