



U T S D C

REQUEST FOR PROPOSAL: TECHNICAL
SUPPLEMENT

UNIVERSITY OF TORONTO SPACE DESIGN CONTEST

February 18, 2011

0.1 Nutrient Growth System

In the Nutrient Growth System section of your proposal, you need to address the following points:

- Describe the growth environment in terms of growth medium, temperature, pressure etc.
- Provide schematics and diagrams for the growth environment
- List the organisms being grown
- Show how the following daily nutritional requirements are met for 100 adults (50 male, 50 female):
 - 8 servings of fruits and vegetables
 - 8 servings of grain products
 - 2 servings of milk products
 - 2 servings of meat and/or meat alternatives
 - 2000 calories
- Justify your design. What trade-offs did you make when you make your design decisions? Could the technology you use feasibly exist in the time frame of your problem?

0.2 Infrastructure

In the Infrastructure section of your proposal, you need to address the following points:

- Describe and provide schematics for the systems required to maintain the growth environment
- Describe how energy, water, growth medium is provided
- Describe and provide schematics for a food harvest system
- Describe and provide schematics for a food storage system
- Justify your design. What trade-offs did you make when you make your design decisions? Could the technology you use feasibly exist in the time frame of your problem?

It is not necessary to consider the construction aspect of the nutrient growth system; just assume that you have the equipment needed to build your structures.

0.3 Transportation

In this section, you are only responsible for determining the transportation for material directly used to create the Nutrient Growth System and its required Infrastructure. You should address the following points in your proposal:

- Provide a method for storing organisms for transport
- Describe the transport route to Mars and the length of the trip
- Provide a transportation schedule (i.e. What materials are sent on what trip)
- You can only have max. of 5 trips (note: the Ares V Cargo rocket has a payload mass of 60 000 kg and has spherical volume of 12 m diameter.)
- For each trip, provide the content of the payload and justification

0.4 Mission Timeline

In this section of the report, you should include the following:

- Include all important milestones required for the completion of your ALSS
- Provide justification for the timeline

0.5 Mission Budget

In this section of the report, you should include the following:

- Provide a quote for your proposal, including a breakdown of costs for the major components
- Provide justification for your quote

0.6 Evaluation

Here is the updated mark breakdown:

Nutrient Growth System	20%
Design	10%
Justification	10%
Infrastructure	40%
Design	20%
Justification	20%
Transportation	10%
Mission Timeline	10%
Mission Budget	10%
Formatting	10%
Structure	5%
Clarity	5%
TOTAL	100%