



U T S D C

# UNIVERSITY OF TORONTO SPACE DESIGN CONTEST

## SPONSORSHIP PACKAGE 2010-2011



## OVERVIEW

### OUR MISSION

The University of Toronto Space Design Contest (UTSDC) seeks to provide superior educational programming in science and engineering for secondary school students. We strive to present students with unique opportunities that they would not otherwise encounter in their regular curriculum. By providing students with a space-related contest challenge, we also aim to promote the benefits of space exploration and development.

### ABOUT UTSDC

UTSDC is an annual contest for high school students that presents a challenging space-related problem to teams of up to five students and tasks them to design an innovative solution. Throughout the year, teams document their solution process, culminating in a short report and the opportunity to present it at the Design Conference in May. In February, contestants attend a Space Workshop where they receive feedback on their current designs from distinguished U of T professors and engineers from Canadian aerospace companies. This internationally-recognized contest brings together students from across Canada and the United States and even from countries as far away as India.

### WHO WE ARE

UTSDC was founded by several undergraduate engineering students in 2004 and is now entering its seventh year. The contest is completely student-run and independent, attracting both undergraduate and graduate students from the Faculty of Applied Science and Engineering to take on leadership roles as the contest's executive members.

UTSDC is affiliated with the internationally recognized University of Toronto Institute for Aerospace Studies (UTIAS) and frequently collaborates with North American aerospace companies and government agencies. These organizations present the students with opportunities to learn from professionals in the engineering industry by providing both contest judges and inspiring speakers. For instance, speakers of past conferences include Canadian astronaut Julie Payette and the developer of Canada's first privately-owned space exploration firm, Brian Feeney.

### A BRIGHTER FUTURE

UTSDC provides bright, prospective students with an excellent introduction to the University of Toronto, via interaction with current students and professors, ultimately imparting motivation to enroll in engineering. Furthermore, approximately 45% of the participants in last year's contest were girls and if they have an excellent time at UTSDC, this will inspire them to join the engineering profession and contribute to the technological development of our society. Therefore, this contest is a great way to reach out to some of the brightest secondary school students across the world and contribute to the education of future industry leaders.

# THE CONTEST

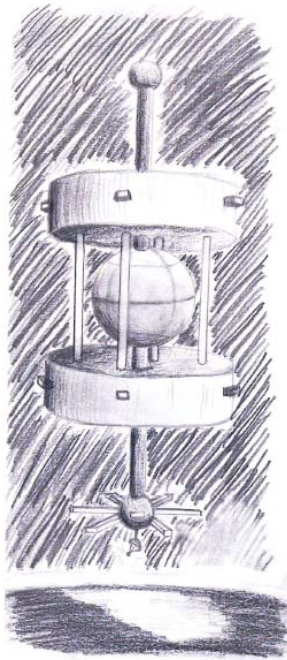
UTSDC requires students to develop designs in response to a Request for Proposal put forward by the organizing committee and faculty from the University of Toronto. Solutions are presented in the form of a short report due in March, as well as a presentation and panel display presented by each group at the conference. For organizational purposes, students are divided into two levels: Junior (Grades 9 and 10) and Senior (Grades 11 and 12).

## PAST DESIGN CHALLENGES

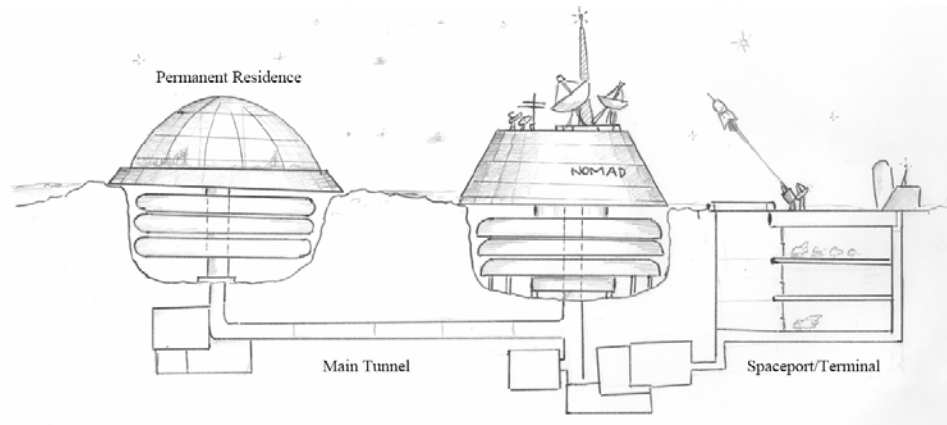
The following are examples of contest topics that UTSDC has challenged students with in the past:

- Orbiting space settlement
- Lunar base
- Space educational facility
- Space emergency response system
- Space hotel
- Near Earth Object (NEO) mitigation

## WINNING ENTRIES: EXAMPLES



**Diagram from winning proposal for space hotel contest challenge.**



**Diagram from winning proposal for lunar colony contest challenge.**

### 1.2 Location

The Perseus Emergency Space Station will be located near Lagrange point 5 (Fig. 7), in close proximity to the moon, the Tesus colony and other near-Earth objects (NEOs). Lagrange points are points in which the gravitational pull of the moon and Earth and the orbital motion are equal, thus a 3<sup>rd</sup> object may stay in stable orbit. PESS will orbit L5 in an 89-day cycle and since it is in a stable location, keeping it on course will be easy. Since Tesus orbits L5 as well, PESS will be orbiting at a different plane than Tesus (Fig. 8). Our Emergency Prevention personnel (Fig. 9) will make sure PESS will not collide with Tesus. It is advantageous to be closer to Tesus since more emergency situations are likely to occur there because of their huge population. The space station will be equipped with pulsed plasma thrusters that will only need a small thrust force to correct the space station's orbit if it falls out of place.

**Sample writing from winning proposal for emergency response system contest challenge.**

## OUR EVENTS

### SPACE WORKSHOP

This is a full-day workshop held at the University of Toronto Institute for Aerospace Studies. Along with a keynote speaker from the aerospace industry, professors and industry leaders are present to assist teams with their projects. In the afternoon, teams have individual consultations with a professor to review their progress and to have any questions answered.

### DESIGN CONFERENCE

Contestants attend a four-day conference where they take part in tours of leading aerospace facilities located in Toronto and interact with likeminded students from across the country. Additionally, the conference will include various seminars given by prominent figures in space engineering research. Please see below for an approximate conference itinerary.



#### **Day One: Welcome & Design Challenges**

- UTSDC proudly welcomes high school students to U of T
- Students attend a lecture from a prominent figure in the aerospace industry, such as Mr. Bob Richards
- Students participate in short design challenges



#### **Day Two: Tours & Activities**

- Students attend the following potential tours:
  - U of T Institute for Aerospace Studies
  - Canadian Air and Space Museum
- Students participate in the following potential activities:
  - Building & launching model rockets
  - Night sky gazing activity



#### **Day Three: Design Fair**

- UTSDC brings together the teams for the final stage of the contest: the display fair and formal presentation
- In the evening, students relax with an active outdoor activity or movie night



#### **Day Four: Awards Ceremony**

- Teams are awarded for their designs and quality of their proposals
- Sponsors have the opportunity to present one or multiple awards

## STUDENT TESTIMONIALS



### **Vijaya Jain (Contestant 2006)**

As a contestant at the UTSDC, I was exposed to a broad range of wonderful experiences at the University of Toronto. I got to network with other contestants and even famous people in astronomy. My experiences in this contest were one of the deciding factors for coming to University of Toronto in the engineering program. Now that I am in my third year of university, I continue to be actively involved in UTSDC to inspire high school students in the fields of astronomy and engineering.



### **Joana Dida (Contestant 2007)**

Staying over at the New College residence and getting to experience a little bit of that "first year university resident" feeling was probably one of the highlights. You get to meet other people who have similar interests in life as you. I am currently studying neuroscience at the University of Toronto but still remember this experience as one of the best I have had in my educational career and try to stay as involved in it as possible.



### **Viviana Castro (Contestant 2008)**

Taking part in the University of Toronto Space Design Contest was an eye-opening experience to the innovative technology that's currently being worked on. It was a great chance to be able to see all the amazing work and research that goes into the project. Aside from the competitive aspect of the contest, it was also great to be able to meet upper years and get a feel of what university life is all about!



### **Jenny He (Contestant 2009)**

The incredible people I met at UTSDC truly made it a unique experience. The number of bright, motivated and ambitious students the contest was able to bring together impressed me. The contest did an amazing job of challenging every one of us to be innovative and think beyond conventional means. I learned things at UTSDC that I never could have learned within the confines of a classroom and I am so glad that I had the opportunity to participate in this competition.

## CONTEST EXPENSES

In order to support some of the brightest secondary school students, this contest aims to not only introduce contestants to the basic science and mathematics concepts required for space engineering, but also raise awareness of Canada's aerospace industry and inspire them to become leaders within it. We hope that, with your added support, we will be able to provide insight into a career in engineering and how the University of Toronto can help support it.

<b>Operating Revenue</b>	
Funds from 2009-2010	\$ 500.00
Registration fees	\$ 10,000.00
<b><i>Total Operating Revenue</i></b>	<b>\$ 10,500.00</b>
<b>Expenses</b>	
Venue and equipment rentals	\$ 1,000.00
U of T residence rental	\$ 15,000.00
Promotional material	\$ 1000.00
Bus transportation	\$ 800.00
Catering	\$ 4,000.00
Prizes	\$ 300.00
Student conference packages	\$ 500.00
General administrative and stationary	\$ 100.00
Printing, conference supplies, delegate packages	\$ 2,000.00
Speakers honoraria	\$ 200.00
Plaques & medals	\$ 200.00
Contingency	\$ 1,000.00
<b><i>Total Expenses</i></b>	<b>\$ 26,100.00</b>
<b><i>Total Amount Needed</i></b>	<b>\$ 15,600.00</b>

## SPONSORSHIP LEVELS

Sponsorship Levels	Lunar (\$250-499)	Planetary (\$500-999)	Stellar (\$1000-2499)	Galactic (\$2500-4999)	Supernova (\$5000+)
Addition of company logo to website and promotional material	✓	✓	✓	✓	✓
Media exposure at design conference	✓	✓	✓	✓	✓
Space for company booth at all events		✓	✓	✓	✓
Introducing a judge and/or mentor			✓	✓	✓
Sponsor contest awards			✓	✓	✓
May host lunch or dinner events for participants				✓	✓
Be recognized as "Presented By"					✓

### OTHER SPONSORSHIP ARRANGEMENTS

If this partnership does not suit what your organization is looking for, we may also be able to tailor a unique and optimal agreement. Please contact the University of Toronto Space Design Contest sponsorship team at [sponsorship@utspace.com](mailto:sponsorship@utspace.com) with any questions or concerns. We would be happy to arrange a meeting to discuss your sponsorship options in person.

Thank you for your consideration and we look forward to hearing from you to discuss the possibility of a partnership with the University of Toronto Space Design Contest.



## IMPORTANT DATES

Welcome Night	October 23, 2010
Space Workshop	February 19, 2011
Design Conference	May 12-15, 2011

## CONTACT

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Thank you for your time and consideration!