

# Conference Funding Proposal

## Engineering Society Conference Funding Application (2013-2014)

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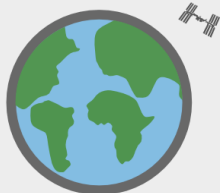
Robotics for Space Exploration (RSX) is a space robotics design team formed in May of 2013. The field of space engineering is growing at a rapid pace, with new advances in space robotics, planetary exploration, satellite technology, and entrepreneurship. Yet, until now not a single design team existed which allows students at UofT to experience and learn about space engineering in a highly practical and applied setting. We are certain that RSX will play a large part in bolstering interest in space and space engineering, and develop the next generation of Canadian engineers who will be at the forefront of the space industry. The goal of RSX is to ensure its members gain a better understanding of the practical side of space engineering. By designing, building, and testing robots designed for planetary and lunar exploration, RSX will compete in space engineering competitions around the world, starting with the **University Rover Challenge (URC) May 29th-31<sup>st</sup>**.

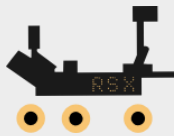
The URC is an annual international competition hosted by the Mars Society for University and College students. Students of various universities from around the world compete in teams to design and build the next generation of Mars rovers that will one day work alongside human explorers in the field. The competition is held at the Mars Desert Research Station in remote southern Utah, outside of Hanksville. The University Rover Challenge is a very challenging and unique competition in which student teams tackle the complexities of robotics, field science, communications, and systems engineering while solving unstructured problems in the harshest of environments.

### University Rover Challenge Competition Focus

RSX will design and build our first rover to compete in the 5 different tasks of the competition, which are reflective of what may be required of a rover on a real Martian expedition.

1. Sample Return Task: Teams must select multiple sites of biological interest within a 0.5km radius of their base, and collect and return sub-surface samples. They must also analyse the collected samples, and justify their selection.
2. Astronaut Assistance Task: Given approximate GPS coordinates, teams will be required to deliver multiple supply containers to simulated astronauts in the field as quickly as possible.
3. Equipment Servicing Task: The rover must perform tasks such as measuring voltage across exposed terminals, cleaning a solar panel, reading meters, pushing buttons and flipping switches.
4. Terrain Traversing Task: Rovers will be required to traverse a variety of difficult terrains as part of an engineering field test of the ruggedness and route-finding ability of the rovers.
5. Presentation Task: Teams will prepare and deliver a presentation to the URC judges describing their team, rover design and functionality.





## Robotics for Space Exploration (RSX) University of Toronto

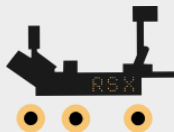


Through the participation of RSX at the University Rover Challenge UofT Engineering will benefit from international exposure. Visiting international destinations on behalf of Skule and displaying the prowess of our engineers will surely add to our reputation as a globally renowned school.

We also believe that Robotics for Space Exploration with URC as our main goal will encourage engineering students to hone unique skills, which simply cannot be taught in controlled classroom environments. Such skills include leadership, the ability to work in teams, and most importantly, practical engineering skills. From machining and circuitry, to programming and scientific analysis, the URC is a highly multidisciplinary competition, requiring members from aerospace and mechanical, to ECE and materials engineering. The complexity of the project will demand members to learn new skills. For example, an electrical, mechanical, and materials engineer will work together to design a robotic arm capable of identifying, sampling, and analyzing properties of an interesting specimen which the rover approaches.

Robotics for Space Exploration would hereby request conference funding of **\$1500** (20%) from the Engineering Society.





## University Rover Challenge Expenses

Attending members: 8

Item	Expenses	Comments
Registration Fee	250	URC participation fee
Flight	6000	Flight tickets, round-trip Toronto-Salt Lake City. \$750 each.
Van Rental	650	Transportation of team and rover between Salt Lake City and Hanksville, where the competition takes place
Accommodation	600	Whispering Sands Motel. 2 x 2 Queen Bed Rooms x 3 nights
<b>Total</b>	<b>7500</b>	

## Supporting Documentation

### Registration Fee

# University Rover Challenge

[Home](#) [About URC](#) [Requirements & Guidelines](#) [Team Info](#) [URC News](#) [Photos](#) [Videos](#) [Resources](#) [Contact](#)

**Registration for URC2014 will open in November, 2013!**

**Is there a registration fee?** Yes, the 2014 registration fee will be \$250 (USD), which will be payable online.

**Are international teams permitted?** Yes, with the exception of countries facing certain sanctions with the United States that would prevent URC registration and participation.

**When will registration close?** January 31, 2014.

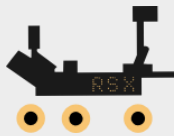
**Should we start work on our systems before we register?** Yes - you should start as soon as possible! Uncertain where to begin? Read our [advice page!](#)

**Is there a limit to the number of teams that can register for URC2014?** No; although if an overwhelming number of teams register, we will make appropriate competition format adjustments to ensure that all teams are able to compete. Don't worry, the tasks and overall competition experience won't change; but we will have to find a way to work with our finite time and other resources.

**What else do I need to do?** If you haven't done so yet, please make sure that you have signed up for the [URC-Announce email list](#).

<http://urc.marssociety.org/home/team-info>





# Robotics for Space Exploration (RSX) University of Toronto



## Flight

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[Nearby airports](#)

Flying to  
  
[Nearby airports](#)

Departing

Returning

**Search**

1 Traveler, All Airlines, Economy / Coach [Show options ▾](#)

## Select your departure to Salt Lake City Tue, May 27

Prices are roundtrip per person, includes all taxes and fees. Additional **baggage fees** may apply.

### Filter your results by

#### Stops

- |                                   |             |
|-----------------------------------|-------------|
| <input type="checkbox"/> 1 Stop   | From: \$734 |
| <input type="checkbox"/> 2+ Stops | \$728       |

#### Airlines

- |  |             |
|--|-------------|
| <input type="checkbox"/> Delta             | From: \$728 |
| <input type="checkbox"/> American Airlines | \$734       |
| <input type="checkbox"/> UNITED            | \$775       |

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Sort by: [Departure](#) [Arrival](#) [Duration](#) [Price ▾](#)

7:30a → 2:16p 8h 46m, 2 stops ATL, ABQ  
YYZ SLC  
Toronto Salt Lake City  
 Delta 5045 | EXPRESSJET DBA DELTA CONNECTION & Delta 4462 | SKYWEST DBA DELTA CONNECTION

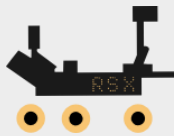
[Flight details](#)

Cheapest  
**\$727<sup>.96</sup>**  
roundtrip per person

**Select**

Price per person.





## Van Rental

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**My Itinerary**

**Time & Place**  
**Pickup Location**  
Salt Lake City Int'l Airport  
2740 California Ave #2  
Salt Lake City, UT 84104

**Pickup Date/Time**  
May 28, 2014 @ 04:00 PM

**Return Date/Time**  
May 31, 2014 @ 04:00 PM

**Time & Place** | **Select Vehicle** | **Rate Details** | **Select Options** | **Customer Info** | **Book It!**

**Chevrolet Express 12 Passenger or similar**

Currency:

3 days @ \$173.01/day **\$519.03**  
Total Rental Charge **\$519.03**

6.85% Sales Tax **\$35.56**  
9.5% Tourism Tax **\$49.31**  
\$1.04/day Vehicle License Fee **\$3.13**  
Total Fees **\$88.00**

Total Free Miles 600  
Extra Mile Rate \$0.26  
Rental Genius Points 497

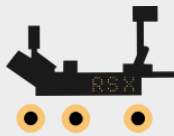
Estimated Rental Price **\$607.03**

[CONTINUE](#)

**Shuttle Information**  
Rugged Rental is the ACE vehicle provider in Salt Lake City. ACE Rent a Car is a short shuttle ride from the terminal. Free shuttle service is provided.

Van rental for 3 days in Salt lake city, Utah.





## Accommodation

**Whispering Sands Motel**

**RESERVATIONS > RESERVATION**

**STAY INFORMATION:**

Property:	Whispering Sands Motel	Room Class:	2 Queen Bed
Arrive:	Wed, May 28, 2014	Adults:	4
Depart:	Sat, May 31, 2014 - 3 Nights	Children:	0

**RATE INFORMATION:**

Date	Description	Tax	Amount
Wed, May 28, 2014	Nightly Room Rate	\$ 9.96\$	88.99
Thu, May 29, 2014	Nightly Room Rate	\$ 9.96\$	88.99
Fri, May 30, 2014	Nightly Room Rate	\$ 9.96\$	88.99

Room Charges: \$266.97  
Incidentals: \$ 0.00  
Taxes & Surcharges: \$ 29.88  
**Total Charges: \$296.85**  
Deposit: **\$296.85**  
Balance: **\$ 0.00**

100.00% deposit required to confirm the reservation.

Reservation for one (1) room with two (2) queen beds for three (3) nights. Two of such are required to accommodate all team members, however each reservation only allows up to four people.

