



**IEEE**

**Ottawa  
Section**



**IEEE Ottawa Robotics Competition  
Compétition de robotique d'Ottawa d'IEEE**

**Supervisors' Information Package**

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**Disclaimer**

It is your responsibility to read and understand this document on a regular basis because we may update it from time to time.

## Word from the Co-Chairs

On behalf of the IEEE Ottawa Robotics Competition (IEEE ORC or ORC) committee, we would like to thank you for your dedication and interest in participating in the 14<sup>th</sup> annual ORC! With your support, students are able to work all year round in teams to design programs and build robots in order to solve our challenges. The ORC promotes the fundamental concepts of **science and engineering** to students, guide and support the students with workshops, and offer an opportunity for students to compete, network, and **HAVE FUN!**

New for the ORC is the uOttawa #defythemaze Challenge, which is best geared towards students looking forward to learning a programming language used in industry. While this challenge would be more suitable for high school students, any participant is welcome to participate in it. You will also have the opportunity to add a personal touch to your robot with a 3D printed decal.

All challenges from ORC 2015 are coming back, like the Carleton University Sumo Challenge, the Drag Race Challenge, the da Vinci Challenge, and the King of the Hill Challenge. The rules have changed slightly for ORC 2016, so make sure to read up on the rules!

Students will also have an opportunity to go through the whole engineering process from start to finish with our Technical Component. They will be critically analyze the decisions they made, document the steps they took while preparing for the competition, and present their work to judges.

You will be able to find out more about the ORC in the rest of this information package, and other documents on our website. If you have **any** questions, please contact us at [orcinfo@ieeeottawa.ca](mailto:orcinfo@ieeeottawa.ca).

We hope to see you at our open house, workshops, and competition day!

Good luck and **HAVE FUN!**

**Heidi Li and David Huynh**  
**Co-Chairs**

## About IEEE ORC

Professor Ramiro Liscano of the IEEE Ottawa Section first created the IEEE Ottawa Robotics Competition in 2003. The first ORC had 5 teams using the Lego Mindstorms RCX kits. It quickly picked up in popularity and there were 24 teams in 2008 when they introduced the Lego Mindstorms NXT kits. A record of 51 teams was then achieved in 2009, which was repeated in 2014 when ORC introduced Lego Mindstorms EV3 kits into the competition.

The overall mission of the IEEE Ottawa Robotics Competition is to promote engineering awareness to students from grades 5 to 12 by presenting a fun and instructive approach to problem solving. Further to that, the IEEE Ottawa Robotics Competition aims to develop an early interest in science, engineering, and technology. In teams, students will design an autonomous robot using either a Lego Mindstorms kit or an Arduino robot to compete in a fun-filled day with exciting challenges. There are many prizes to be won, which include Lego Mindstorms EV3 Kits, among many others.

## Your Role as Supervisor

Your primary role as a supervisor to teams is to provide tutelage and mentoring to your teams so that they are able to succeed at ORC. **Supervisors are to act in an advisory role only**, so supervisors must not be directly helping teams to complete competition requirements. You are allowed to help with basic problems, like switching wires because they are in the wrong port. However, for more complex problems like logic errors, you cannot solve the problem for the team, but you may guide them towards a solution. Moreover, you may suggest areas for improvement for the Technical Component like saying that a section needs to be clearer, but you may not make explicit recommendations for changes.

Teams may be made up of 2 to 7 students from grades 5 to 12. Below is a table with our recommended numbers of students on a team given the number of registered challenges.

Number of Challenges	Recommended Number of Team Members
One Lego	3 – 6
Only Arduino	2 – 4
Two Challenges (Lego and/or Arduino)	5 – 7

## Important Dates

Event	Date & Time	Location
<b>Workshop #1</b>	Feb. 17 <sup>th</sup> , 2016 9 am – 3 pm	University of Ottawa, SITE 2060/2061 (800 King Edward Ave.)
<b>Workshop #2</b>	Feb. 20 <sup>th</sup> , 2016 10 am – 3 pm	University of Ottawa, SITE 2061 (800 King Edward Ave.)
<b>Registration Closes</b>	Apr. 1 <sup>st</sup> , 2016 at 6 pm	
<b>Workshop #3</b>	Apr. 28 <sup>th</sup> , 2016 9 am – 3 pm	University of Ottawa, SITE 2060/2061 (800 King Edward Ave.)
<b>Workshop #4</b>	Apr. 30 <sup>th</sup> , 2016 10 am – 3 pm	University of Ottawa, SITE 2061 (800 King Edward Ave.)
<b>Attendance Confirmation, Lunch, and T-Shirt Orders</b>	May 2 <sup>nd</sup> , 2016 Due at 5 pm	Late submissions will <b><u>NOT</u></b> be accepted
<b>Registration Fee Payment Due Date</b>	May 15 <sup>th</sup> , 2016	Payment must be <b><u>received</u></b> by this date. See “Fees” section for more information.
<b>Reports</b>	May 18 <sup>th</sup> , 2016 Due at 10 pm	Send all reports to <a href="mailto:orcrcpts@gmail.com">orcrcpts@gmail.com</a>
<b>Competition Day</b>	May 28 <sup>th</sup> , 2016 9 am – 5 pm	Longfields-Davidson Heights Secondary School (149 Berrigan Dr.)

## Challenges & Requirements

Each team may register in up to 2 challenges (Arduino or Lego). For this year, we have the following challenges to offer:

<b>Lego</b>	<b>Arduino</b>
<ul style="list-style-type: none"><li>• Carleton University</li><li>• Sumo</li><li>• Drag Race</li></ul>	<ul style="list-style-type: none"><li>• da Vinci</li><li>• King of the Hill</li><li>• uOttawa</li><li>• #defythemaze</li></ul>

In Lego challenges, teams will have to build and program autonomous robots designed for their specific challenges. For the uOttawa #defythemaze Challenge, teams will have the option of building their robot or having the Arduino Division of ORC's R&D Team put a robot together. The programming is then done by the team. The performance of the teams in their challenges will account for **70%** of their final mark.

The other **30%** of the final mark will be based on the Technical Component. This Technical Component has been revamped for ORC 2016 to maximize their achievements from the students. Students are demonstrating their critical thinking skills through the Technical Component and many other skills needed for future academic studies and careers, like presentation skills. If accommodations are needed, please contact us, and we would be happy to discuss other options.

## Fees

Fees for ORC 2016 are as follows:

<b>Description</b>	<b>Fee</b>
Lunch	\$5 per supervisor or student
Registration for all teams, if at least one team is registered before March 1 <sup>st</sup> , 2016	\$15/student
Registration, if no teams were registered by March 1 <sup>st</sup>	\$20/student

A registered team is considered as registered when the Excel spreadsheet or Google Sheet sent to you is filled with a minimum of one team of student names.

## **Fees (continued)**

Your teams, lunch orders (optional), and T-shirts orders must be confirmed by **May 2<sup>nd</sup>, 2016 by 5 pm**. Late submissions will **not** be accepted. An invoice will be sent to you by **May 5<sup>th</sup>, 2016**. We must **receive full payment** before **May 15<sup>th</sup>, 2016** so that your team(s) can compete on competition day. **If full payment is not received by May 15<sup>th</sup>, your team(s) may become ineligible to compete on competition day.**

## **Payment of Fees**

All fees can be paid for by cheque or electronic means (transaction fees will apply). Please contact ORC's Finance Chair, Jeffrey Arcand, at [jeffrey.arcand@ieee.org](mailto:jeffrey.arcand@ieee.org) regarding fees and payment.

## **Kits**

For ORC's Lego Challenges, we will accept either NXT or EV3 kits in good working order. You are allowed to mix parts from either NXT, EV3, or RCX kits as long as the robots are in compliance with our restrictions, which can be found in the General Competition Rules for Lego Challenges. You can have up to 1 robot per challenge (i.e. 2 challenges = 2 robots max).

For the uOttawa #defythemaze Challenge, files to 3D print the chassis of the robot will be provided on the Arduino page of our website. A list of parts is also available on that page in order to build the robot. However, the Arduino Division of ORC's R&D Team can also pre-assemble a robot for your teams.

## **LEGO® MINDSTORMS Software**

The official EV3 LEGO® MINDSTORMS Software can be downloaded for free from the [LEGO® website](#). You can program the NXT Intelligent Brick with the EV3 Home Edition Software. However, not all the functions will be supported by the NXT Brick. You will need the EV3 Ultrasonic Sensor Block if you are programming with an EV3 Education kit with the Home Edition software, which can be found [here](#).

## Arduino IDE (Programming Software)

The Arduino platform uses an Integrated Development Environment (IDE) for programming, which can be found [here](#). The Arduino Division of ORC's R&D Team will be posting up a series of libraries on the website, which are to be used in order to manage the motor control shield of the Arduino robot. These libraries are set up so that teams can focus on the main goal of the uOttawa #defythemaze Challenge.

## Registration

Supervisors must register on our website at <http://orc.ieeeottawa.ca/competition/>. Once supervisors are registered, we will send a Google Sheet or spreadsheet that must be completed. Please ensure that all food allergies/restrictions are indicated for team members, even if it seems like the food options are perfectly acceptable for those who are opting to get lunch through ORC.

**When making teams, they must be composed of 2 to 7 students from grades 5 to 12. All supervisors for a school or community group are allowed to register up to 8 teams per school/community group.**

Please also note that media consent has changed from previous years. Please let all parents/guardians know of our new media consent policy, which can be found here: <http://www.orc.ieeeottawa.ca/wp-content/uploads/2013/11/ORC2016-MediaConsentEN.pdf>. This policy will also apply to those who have opted out in the past.

## Workshops

The workshops take place at the University of Ottawa, SITE Building. Five workshops have been booked, with one of them being dedicated to supervisors. The supervisor's workshop will be presented in order to help those who need more knowledge on either Lego Mindstorms or the Arduino platforms. The ORC committee will go over rules in all workshops, and students will be able to ask questions and test their robots during the other four workshops. You do not have to attend all four workshops for students, as they are all of similar format. Ensure that you and your teams bring packed lunches, your robots, and your enthusiasm to these workshops!

## Competition Day

Competition day (**Saturday, May 28<sup>th</sup>, 2016**) will be held at Longfields-Davidson Heights Secondary School (149 Berrigan Dr.) from about 9 am – 5 pm. Below is a general competition day schedule, but a more detailed schedule will be provided towards the middle of May 2016.

Competition day will include time to test out robots, round robin tournaments, lunch (optional), elimination rounds, and an awards ceremony. Please ensure that all teams have all that they need by checking our competition day checklist (<http://www.orc.ieeeottawa.ca/wp-content/uploads/2015/03/ORC2016-CompDayChecklistBIL.pdf>).

### Competition Day General Schedule

<u>Event</u>	<u>Time</u>
Set-up, Testing, and Presentations	8:30 am – 10:00 am
Round Robin Begins	10:00 am – 12:15 pm
Lunch	12:15 pm – 1:30 pm
Tournament Rounds Begin	1:30 pm – 4:00 pm
Closing Ceremony	4:00 pm – 4:30 pm

### Other Disclaimers

Please note that supervisors are also responsible for ensuring that any ORC participant is supervised by an adult of 18 years old or older at any ORC event (workshop, competition day, etc.). The IEEE Ottawa Section, ORC, ORC volunteers, and employees of any hosting venues are not responsible for the well-being of any attendees or for anything that occurs while attending an ORC event.

Please also note that IEEE Ottawa Section, ORC, ORC volunteers, and employees of any hosting venues are not responsible for any costs incurred to your team as a result of unexpected occurrences during ORC events, such as: parking tickets, hotel costs, meals, etc.