

## Advanced LEGO Mindsorms (Course ID 2461)

This is a STEM learning course which can help students not only on engineering but also on future science studies. And it is higher level course than LEGO Robotics (Course ID 2421) for who had FLL Jr. Team course (Course ID 2441) experience. We will use LEGO Mindstorms as a tool for teaching endless concepts and a source of engineering challenge for our students.

The key characters are:

1. With a small group of class (Six students), each student will get more attentions;
2. Hands-on LEGO Mindstorms EV3 (Two students share one set);
3. Use LEGO Education curriculum to help student learning STEM;
4. Focus on LEGO build and programming tool (Not FLL competition). More fun not bored.
5. Start to train students interest on coding
6. Prepare for higher lever programing
7. Prepare for FLL competition.

The pre-requirements:

1. Had FLL Jr. course before;
2. Age 10+ with some LEGO technic build experiences and willing to learn programming;
3. Build robots by using LEGO Mindstorms EV3;
4. Instructor approves.

For students: We recommend the students to have their own laptop PC which is running Windows for full function LEGO Mindstorms. Some students without PC can use iPad with iOS 8.0 or later, MINDSTORMS EV3 LEGO® Education software app is required and it is free to download from iTunes store. But the iPad LEGO app would not give us full functions. This course will cover:

- Science – Over thirty real world projects to lead students to learn various kinds of knowledge and get into problem solving path.
- Math – Many concepts and principles are applied to the robot building when it comes to programming it. Distance and turning circle are the most common among of calculation.
- Engineering – To build a robot and learn robotics and mechanics
- Physics – Along with efficiency, learn to design and make a stable structure
- Programming – There are lots of fun when start to create and control with your apps.

