An after-school experience focused on providing children aged 6 to 14 with exceptional hands-on STEAM-powered projects that:

- Foster a love of creating
- Enhance problem-solving skills
- Reinforce and expand on concepts and ideas taught in school
- Provide delight and inspire curiosity
- Encourage self-expression
Non vitæ, sed scholæ discimus
[Too often,] we don’t learn for life, but only for the lecture room
—Seneca, *Ad Lucilium*, c. 65 AD
# Table of Contents

<table>
<thead>
<tr>
<th>Heading</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A New Season</td>
<td>4</td>
</tr>
<tr>
<td>TinkRworks Overview</td>
<td>5</td>
</tr>
<tr>
<td>Our Disciplines</td>
<td>6</td>
</tr>
<tr>
<td>How We Are Different</td>
<td>7</td>
</tr>
<tr>
<td>Eligibility &amp; Tracks</td>
<td>8</td>
</tr>
<tr>
<td>How We Engage with TinkRers</td>
<td>9</td>
</tr>
<tr>
<td>Enrollment</td>
<td>11</td>
</tr>
<tr>
<td>2016 Schedule Snapshot</td>
<td>13</td>
</tr>
<tr>
<td>2016 Project Descriptions</td>
<td>15</td>
</tr>
</tbody>
</table>
Dear Friends,

As our children enter a new year of school and autumn beckons, several of us are left wondering, “where did the summer go?” Though summer is nearly behind us, the one thing that lingers are fond memories of the fun we enjoyed: children swimming outdoors under a warm sun, family members taking long walks together, TinkRers performing high-speed and acrobatic maneuvers with drones they designed and built, and TinkRers watching their constructed model rockets soar to heights of 1,200 feet with an attached camera streaming a live video feed of the earth as the rocket climbs steadily upward. Indeed, summer left us with great memories!

From our side, we had an incredible time engaging with TinkRers throughout the entire summer. In all, we ran a total of 6 week-long projects that focused on fun and enrichment. In one of our projects, My Robot, TinkRers designed, built, and coded their very own robot to perform functions sparked by their imagination. In another one of our projects, Real-World Minecraft, TinkRers flexed their electronics, coding, and traditional-making muscles as they linked the virtual Minecraft world to the real world through physical objects they created, e.g., levers, switches, buttons. By adding electronics to these physical objects, TinkRers in the physical world were able to control actions in the virtual world and vice versa. We were inspired by TinkRers throughout the TinkRcamps and felt privileged that we had the opportunity to work hand-in-hand with such bright and inquisitive minds.

With the onset of autumn, a new season begins for us as well. In addition to moving to our state-of-the-art Engagement Center in Downtown Hinsdale, we have also developed an exciting portfolio of diverse projects for TinkRers aged 6-14 that we outline in detail in this catalog. As you will see, we have categorized projects into three different tracks, each with a different objective. In doing so, we enable TinkRers to explore new things on a project-by-project basis or emphasize specific topics of interest to them such as coding or robotics, or even immerse themselves into our year-long curriculum-based offering. Each track allows TinkRers the chance to solve relevant and complex challenges by applying skills that they develop and hone throughout the year.

Our entire Team is excited about the new season and as always, our promise to you is that we will provide experiences that are both exceptional and enriching. This has been our goal since we started and continues to be our aspiration. It really is what we’re all about.

I look forward to having you and your TinkRer(s) join us this fall at our new Engagement Center.

Sincerely,

Anu Mahajan, Ph.D., M.B.A.
CEO TinkRworks
What is TinkRworks?

TinkRworks is a new and innovative provider of exceptional STEAM (Science, Technology, Engineering, Arts and Mathematics) experiences for children aged 6-14, who we refer to as “TinkRers.”

We carefully craft each experience to build on and go beyond what’s taught in school. This reinforcement helps TinkRers bring to life what they learn in the classroom in deeper and more meaningful ways.

Our approach immerses TinkRers in project-based settings where they are faced with challenging problems to solve. Using combinations of 21st century skills (e.g., coding, 3D-printing, electronics) and traditional skills (e.g., woodworking, painting), TinkRers embrace these problems and tackle them head-on, achieving beautiful results along the way.

What are exceptional experiences?

We believe three critical elements define exceptional experiences:

1. Superb educational & hands-on content
2. Excellence in instruction
3. A welcoming and collaborative environment

Our promise to TinkRers and their parents is that every experience with TinkRworks will be truly exceptional in every way. Exceptional experiences—it’s what TinkRworks is all about.
Alignment to Disciplines

We align our experiences around real-world maker disciplines to ensure skillsets developed by TinkRers are relevant as their education progresses, both in their schooling and beyond. TinkRers will learn how to code, 3D-print, solder and saw not just because doing so is fun, but because these skills are useful—and needed—to solve problems they will encounter.

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer Science</strong></td>
<td>Creating applications for various devices (e.g., computers, tablets, phones) by using programming languages and techniques</td>
</tr>
<tr>
<td><strong>Digital Making</strong></td>
<td>Using computer-controlled toolsets (e.g., 3D-printers, laser cutters) and software to design &amp; create physical objects.</td>
</tr>
<tr>
<td><strong>Communications &amp; Digital Media</strong></td>
<td>Creating, editing and presenting text, digital images, sounds, and video to improve communications.</td>
</tr>
<tr>
<td><strong>Art &amp; Design</strong></td>
<td>Imagining and creating objects by drawing, painting, sculpting, etc. in order to achieve aesthetic objectives.</td>
</tr>
<tr>
<td><strong>Electronics</strong></td>
<td>Building electrical circuits by soldering, wiring, and stitching together components such as LEDs, sensors, motors, etc.</td>
</tr>
<tr>
<td><strong>Traditional Making</strong></td>
<td>Creating physical structures and objects by sawing, drilling, gluing, and hammering.</td>
</tr>
</tbody>
</table>
How We Are Different

Exceptional experiences
Our mantra is simple: *create exceptional and enriching experiences for children using the best available resources.*

Excellence in instruction with 1:6 ratios
Our instructor base is comprised of PhDs, technology-industry veterans, teachers, and child-development specialists, all of whom have strong passion and interest in propelling each TinkRer to success. We also guarantee an instructor-to-student ratio of 1:6 or better in our Engagement Center.

Project-based learning
Our project-based approach orients TinkRers to identify challenges that must be overcome in order to solve complex problems – terrific preparation for the real world, and a great motivation for life-long learning.

Inter-disciplinary approach
We believe the best solutions to complex problems come from incorporating different perspectives and disciplines.

Layered curriculum
We ensure each TinkRer’s growth by creating experiences that build on previously developed skills as well as by providing individualized support.
Eligibility

We currently engage with TinkRers aged 6-14. Depending on age, TinkRers can be enrolled in one of three tracks we offer, each with a different focus.

Eligible ages
We group our TinkRers into four different age groups:

- Age 6
- Ages 7+
- Ages 9+
- Ages 12-14

Tracks
We organize our experiences across three tracks, each of which has different age-eligibility requirements:

<table>
<thead>
<tr>
<th>Track</th>
<th>Description</th>
<th>Age availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration</td>
<td>Introductory 4-week projects that provide exposure to wide ranges of topics, e.g., coding, robotics.</td>
<td>6    7+  9-14</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Quarter-long sequence of projects that provide depth in a particular subject area (e.g., Robotics I, II, III).</td>
<td>✔    ✔    ✔</td>
</tr>
<tr>
<td>Immersion</td>
<td>Nine-month sequence of immersive STEAM projects that build upon one another to truly deepen learning.</td>
<td>✔    ✔    ✔�</td>
</tr>
</tbody>
</table>
Engaging

How We Engage with TinkRers

We engage with TinkRers across our four age groups in different ways. Specifically, depending on age, we use an instructional model which offers TinkRers two types of sessions:

1. Each TinkRer attends a once-weekly Instructor-Led Session.
2. Also, once-weekly Open-Lab Sessions are available to ages 7 and up.

1. Instructor-Led Sessions
   Availability: All age groups (6 years and up)
   During these sessions, instructors will teach, guide, and support TinkRers on specific elements of their projects related both towards skillset development and problem-solving enhancement.

2. Open-Lab Sessions
   Availability: TinkRers aged 7 and up
   During these instructor-supervised sessions, focus is placed on creative exploration and inspiring curiosity. TinkRers are provided full use of our Engagement Center to further hone their skillsets and assess new ways to solve the problems outlined in their projects. TinkRers will interact with other TinkRers from different projects and age groups to discuss problems, generate new ideas, and collaborate on solutions that they might not have otherwise devised on their own.
Engaging (continued)

**Weekly Engagement Summary**

Based on the age group of the TinkRers, hourly engagement per week will be different and will comprise of combinations of Instructor-Led Sessions and Open-Lab Sessions. The total weekly engagement hours for any project or track are summarized as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th># of weekly sessions</th>
<th>Session duration</th>
<th>Total weekly engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Instructor-Led</td>
<td>Open-Lab</td>
<td>Instructor-Led</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
<td>1 hour</td>
</tr>
<tr>
<td>7+</td>
<td>1</td>
<td>1</td>
<td>1 hour</td>
</tr>
<tr>
<td>9+</td>
<td>1</td>
<td>1</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>12-14</td>
<td>1</td>
<td>1</td>
<td>1.5 hours</td>
</tr>
</tbody>
</table>

As an example, a 9+ TinkRer enrolled in an Exploration Project is enrolled for a total of 4 weeks (as is the case with all of our Exploration Projects). During the project, the TinkRer would come to our Engagement Center two times per week (once for an Instructor-Led Session and once for an Open-Lab session), for a total of 3 hours per week, or 12 hours for the entire project (3 hours per week across 4 total weeks).

Several Open-Lab options exist and TinkRers are free to change attendance on a week-to-week basis, allowing for maximum flexibility.
Enrollment

Pricing

For the remainder of 2016, introductory pricing is available on all projects and tracks. This introductory pricing is discounted 10% relative to our standard rates and is the pricing highlighted in our current project descriptions. This introductory pricing holds for all registrations that occur in 2016, even if the projects and tracks extend into 2017. Starting in 2017, pricing will revert to our standard rates.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Exploration Projects</th>
<th>Emphasis Track</th>
<th>Immersion Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>$139</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7+</td>
<td>$229</td>
<td>$639</td>
<td>N/A</td>
</tr>
<tr>
<td>9+</td>
<td>$339</td>
<td>$939</td>
<td>$2,249</td>
</tr>
</tbody>
</table>

The above pricing includes enrollment in Instructor-Led Sessions and Open-Lab Sessions. Additionally, with limited exceptions, each TinkRer’s creations are theirs to take home at the end of the project or track, letting them continue learning.

Additional Discounts

Sibling discounts and referral discounts both apply. Sibling discounts are 10% off for each sibling concurrently enrolled. Referral discounts of 5% come in the form of course credits and apply to both the referring party as well as the party referred.

Begin the Journey

Enrollment is now open and will continue until projects and tracks are filled or until the first day of any given project/track. Here are two ways to enroll:

2. Phone enrollment by calling us directly at 708-401-5956 anytime Monday-Friday from 9:30 am – 5:30 pm CT.

1 Exploration projects are 4 weeks in duration
2 Emphasis tracks are 12 weeks in duration
3 2016 Immersion tracks are 25 weeks in duration
# 2016 Schedule Snapshot: 6, 7+, and 9+

To facilitate the selection process, a high-level snapshot of our projects and tracks is outlined below. Detailed descriptions of each offering below is provided starting on Page 15.

All dates and times listed are for Instructor-Led Sessions only. For age groups 7+ and above, one Open Lab Session per week is also included in enrollment. Open Lab Sessions are to be scheduled separately, as we offer a variety of Open-Lab scheduling options to allow flexibility when registering.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>6</td>
<td><strong>EX</strong></td>
<td>Thursdays 3:45-4:45 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7+</td>
<td><strong>EX</strong></td>
<td>Saturdays 10:45-11:45 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EM</strong></td>
<td>Tuesdays 4:15-5:15 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9+</td>
<td><strong>EX</strong></td>
<td>Tuesdays 3:45 – 5:15 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wednesdays 5:45-7:15 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EM</strong></td>
<td>Saturdays 1:45-3:15 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wednesdays 5:45-7:15 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>IM</strong></td>
<td>Thursdays 5:45 – 7:15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. EX = Exploration Project; EM = Emphasis Track; IM = Immersion Track

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EX = Exploration Project; EM = Emphasis Track; IM = Immersion Track
2016 Schedule Snapshot: Ages 12-14

To facilitate the selection process, a high-level snapshot of our projects and tracks is outlined below. Detailed descriptions of each offering below is provided starting on Page 15.

All dates and times listed are for Instructor-Led Sessions only. For age groups 7+ and above, one Open Lab Session per week is also included in enrollment. Open Lab Sessions are to be scheduled separately, as we offer a variety of Open-Lab scheduling options to allow flexibility when registering.

<table>
<thead>
<tr>
<th>Age</th>
<th>Track¹</th>
<th>Days &amp; Time</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-14</td>
<td>EX</td>
<td>Wednesdays 5:15-6:45 pm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wednesdays 3:45-5:15 pm</td>
<td>Wear &amp; Scare 10/5 – 10/26</td>
</tr>
<tr>
<td></td>
<td>EM</td>
<td>Wednesdays 3:45-5:15 pm</td>
<td>Robo-Safe 11/9 – 12/7</td>
</tr>
<tr>
<td></td>
<td>IM</td>
<td>Saturdays 3:45-5:15 pm</td>
<td>Coding: Internet of Things 11/2 – 12/14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tech 2 Connect 11/5 – May, 2017</td>
</tr>
</tbody>
</table>

¹ EX = Exploration Project; EM = Emphasis Track; IM = Immersion Track
Age 6

During the Fall/Winter 2016 season, we offer **two Exploration-Track Projects** to TinkRers aged 6, with focus placed on robotics and coding. As with all of our Exploration projects, these will run for a total of 4 weeks each.

**Age 6 Exploration-Track Projects (4 weeks each)**

1. **RoboPal**
   
   **Dates:** Sep. 29th to Oct. 20\(^{th}\) (Thursdays)
   
   **Times:** 3:45 – 4:45 pm
   
   **Introductory pricing:** $139

   TinkRers will have a blast learning the basics of robotics by using pre-built Lego Mindstorms robots that can sense colors and execute movements based on these colors. TinkRers will learn foundational programming skills by "teaching" the robots to perform a variety of amusing robot dances using different color-coded cards that they design.

2. **Robot Playground**

   **Dates:** Nov. 3\(^{rd}\) to December 1\(^{st}\) (Thursdays)
   
   **Times:** 3:45 – 4:45 pm
   
   **Introductory pricing:** $139

   TinkRers will have fun exploring fundamental robotic concepts as they design and build a playful environment in which several pre-built robots can move around and interact with each other. Their "robot playground" will include equipment and obstacles such as ramps, walls, and tunnels. TinkRers will enjoy developing their design and building skills as well as an understanding of how robots sense and react to their environments.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com*
Ages 7+

During the Fall/Winter 2016 season, we offer two Exploration-Track Projects as well as one Emphasis-Track offering to Tinkers in the 7+ age group. The selected Exploration projects focus on developing balanced capabilities across our disciplines. Our Emphasis Track offering, Scratching the Surface, will heavily focus on our Computer Science discipline and is a quarter-long journey into coding and the development of logic skills needed for problem solving.

For the 7+ age group, in addition to the dates/times below, TinkRers also have access to a one-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Age 7+ Exploration-Track Projects (4 weeks each)*

1. Mighty Kite
   Dates: Oct. 8th to Oct. 29th (Saturdays)
   Times: 10:45 – 11:45 am
   Introductory pricing: $229

TinkRers will construct and fly electronically-enhanced kites which both sail the skies and also function as a mobile weather station capable of transmitting measurements back to a control box on the ground. Measurements will include the altitude of the kite, barometric pressure, and temperature. Additionally, kites may be outfitted with micro-cameras which will allow TinkRers to see a bird's-eye view of the earth.

2. HEXBUG City
   Dates: Nov. 5th to Dec. 3rd (Saturdays)
   Times: 10:45 – 11:45 am
   Introductory pricing: $229

TinkRers will feel like heroes when they save a city from the invasion of micro robots known as HEXBUGs. This will be accomplished by designing and building contraptions that trap or banish these pests from the fair city. The electronically-controlled trap doors and catapults that hurl the pesky critters over the walls of the city are sure to make the TinkRers laugh as they learn!

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com
Ages 7+ (continued)

For the 7+ age group, in addition to the dates/times listed below for our Emphasis-Track offering, **TinkRers also have access to a one-hour weekly Open Lab session which will need to be scheduled either ahead of time or on the first day of the project.**

Age 7+ Emphasis-Track Project (12 weeks)

1. **Scratching the Surface**
   Dates: Nov. 1<sup>st</sup> to Feb. 14<sup>th</sup> (Tuesdays)
   Times: 4:15 – 5:15 pm
   Introductory pricing: $639

This track will develop the TinkRers knowledge and understanding of coding in a manner that is both enriching as well as highly engaging. Instructors will guide TinkRers in creating applications in Scratch, a visual programming language developed at MIT for introducing computer science to children. The applications created by TinkRers will be used for entertainment or to explore mathematical concepts and to help with homework. TinkRers will learn about decisions, loops, routines, and other fundamental concepts in computer science. During this track, TinkRers will enjoy creating amusing animations and games which they can share with their friends.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com*
2016 Project Descriptions

Ages 9+

For our 9+ age group, we offer a breadth of engagements in 2016. These include:

- **Exploration-Track Projects**: Three different projects to choose from, all highly diverse and unique.
- **Emphasis-Track Offerings**: Two quarter-long engagements, one focused on coding and the other on robotics.
- **Immersion-Track Offering**: One 25-week engagement that intertwines our disciplines in such a way to truly propel the critical-thinking & problem-solving capabilities of TinkRers like no other experience they have encountered.

For the 9+ age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly **Open Lab session** which parents can schedule either ahead of time or during the first session.

Age 9+ Exploration-Track Projects (4 weeks each)*

<table>
<thead>
<tr>
<th>1. Hack-O-Lantern</th>
<th><strong>Introductory pricing</strong>: $339</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates: Oct. 4th to Oct. 25th (Tuesdays)</td>
<td></td>
</tr>
<tr>
<td>Times: 3:45 – 5:15 pm</td>
<td></td>
</tr>
</tbody>
</table>

TinkRers will scare up some fun as they build the most amazing robotic Jack-O-Lantern using the making skills that they develop in this project. Lights, sounds, sensors, and motorized elements will be assembled, wired up and coded, and then inserted into carved pumpkins by the joyful TinkRers! To top it all, the TinkRers will bring their Hack-o-lanterns home in time for Halloween!

<table>
<thead>
<tr>
<th>2. PythonBot</th>
<th><strong>Introductory pricing</strong>: $339</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates: Oct. 5th – Oct. 26th (Wednesdays)</td>
<td></td>
</tr>
<tr>
<td>Times: 5:45 – 7:15 pm</td>
<td></td>
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</tbody>
</table>

TinkRers will use Python, one of the most commonly used and versatile programming languages available, to draw computer-generated pictures and control a Lego robot. They will build foundational Python skills as they use a virtual pen tip (known as “turtle”) to draw cool graphics. They will learn to use loops, conditionals, and other coding concepts and then apply these skills to give a Lego Mindstorms robot an ability to make decisions and interact with its environment in a manner the TinkRers themselves will determine.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com*
Ages 9+ (continued)

For the 9+ age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly **Open Lab session** which parents can schedule either ahead of time or during the first session.

**Age 9+ Exploration-Track Projects, cont. (4 weeks each)**

### 3. Hall-E-Day Party

**Dates:** Nov. 8\(^{th}\) to Dec. 6\(^{th}\) (Tuesdays)

**Times:** 3:45 – 5:15 pm

**Introductory pricing:** $339

Just in time for the holidays (or as we like to call them, the “Hall-E-Days”)! TinkRers will have a ball getting ready for an out-of-this world holiday light-and-sound party. They will create colorful lighting elements out of LEDs that will respond to rhythmic beats and sounds—including their own voice—while learning about electronics, coding, and 3D-printing in the process. After they participate in our very own TinkRworks Hall-E-Day party, they can take their decorations home to enjoy them again and again!
Ages 9+ (continued)

For the 9+ age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Age 9+ Emphasis-Track Project—ROBOTICS (12 weeks)*


Dates: Nov. 5, 2016 – Feb. 18, 2017 (Saturdays)
Times: 1:45 – 3:15 pm
Introductory pricing: $939

TinkRers will dive deeply into the rich realm of robotics as they spend a full quarter focused on constructing a robot from scratch. Starting with the same type of robotic chasses (SparkFun-based) that a number of top tier engineering schools throughout the US use, TinkRers will construct a fully functioning robot that moves, senses, and even talks. In doing so, they will utilize a microcomputer (Arduino), wire up several sensors, incorporate motors for movement, and add a variety of other electronic components to achieve functionality that they envision. Once construction is completed, TinkRers will program the robot to perform tasks such as following a line on the floor, avoiding obstacles, and even autonomously solving a variety of mazes.

This project will teach the TinkRers the foundational robotics concepts that will serve as building blocks for future robotic adventures. Definitely an engagement not to miss!
Ages 9+ (continued)

For the 9+ age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Age 9+ Emphasis-Track Project—CODING (12 weeks)*

5. Coding Emphasis Track: Pampered Plant
Dates: Nov. 2, 2016 to Feb. 15, 2017 (Wednesdays)
Times: 5:45 – 7:15 pm
Introductory pricing: $939

This very unique coding track focuses on an intriguing and relevant problem that TinkRers must solve (and one that would benefit all of us!): what actions must be taken to ensure that our house plants thrive during the brutal Chicago winters? Solving this problem is all about having TinkRers develop a technology-based system that constantly—and automatically—monitors the health of plants and then reports issues that arise, forcing TinkRers and family members to take action.

TinkRers start this effort by developing the technological core of a plant-monitoring station—a micro-computer (Arduino) based array of sensors that collects plant habitat data and creates alerts when a plant needs care. Skillsets around coding and programming logic will be developed and honed as TinkRers learn to apply concepts such as sequencing, loops and conditionals in a visual-coding language. Next, they’ll build a web page to display the plant data using another coding language, HTML. TinkRers, as well as family and friends, can then go to the live website built by TinkRers to understand the overall health of the plant and take the suggested actions when alerts to the website are issued.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com
Ages 9+ (continued)

For the 9+ age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Age 9+ Immersion-Track Project (25 weeks)*

6. Spy Gear

Dates:  Nov. 3, 2016 to May 25, 2017 (Thursdays)
Times:  5:45 – 7:15 pm
Introductory pricing: $2,249

TinkRers will spend the year acquiring amazing making, coding, and electronic skills that they will combine to create entertaining and functional spy gadgets. Once completed, TinkRers can then test these out—in fun and friendly ways, of course—on their siblings and friends. Along the way, TinkRers will learn all about the different gadgets that have been used throughout the years in the world of spying and learn how these gadgets were used to successfully gain information and capture the bad guys! In fact, many of the items TinkRers make were once used in the past, which makes this Immersion Track one of historical relevance as well. Additionally, don’t be surprised if your TinkRer comes home with some gadgets used by James Bond, as it’s impossible to talk about spying without mentioning—and creating—at least some gadgets used by 007.

Throughout this Immersion Track, TinkRers will develop 21st-century design & making skills by using computer-aided design (CAD) software, along with 3D printers, laser cutters, vinyl cutters, and other digital equipment. TinkRers will combine these newly-developed skills with traditional making skills (sawing, hammering, etc.) to create miniature housing for their spy gadgets which they then will fill with electronics. After coding these devices, TinkRers will have functioning spy gear, including intruder alerts, surveillance equipment, and messaging tools, which they will use in various missions designed to heighten their problem-solving skills.
Ages 12-14

For our 12-14 age group, several engagement opportunities are offered, including:

- **Exploration-Track Projects**: Three different projects to choose from, all unique in nature, offering a balance of our disciplines
- **Emphasis-Track Offerings**: Two twelve-week long engagements, one focused on coding and the other on robotics.
- **Immersion-Track Offering**: One 25-week engagement focused on the Internet of Things—one of the hottest emerging topics in the world of technology.

For the 12-14 age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly **Open Lab session** which parents can schedule either ahead of time or during the first session.

### Ages 12-14 Exploration-Track Projects (4 weeks each)*

<table>
<thead>
<tr>
<th>Project</th>
<th>Introductory pricing: $339</th>
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<tbody>
<tr>
<td><strong>1. Wear &amp; Scare</strong></td>
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<tr>
<td>Dates: Oct. 5th to Oct. 26th (Wednesdays)</td>
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<td>Times: 5:15 – 6:45 pm</td>
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TinkRers will reignite their passion for making during Halloween as they create high-tech wearable costume enhancements. The TinkRers will design and build electronically-controlled light, sound, and movement elements to thrill and amaze their friends at parties and trick-or-treating outings. As part of this project, TinkRers will learn the fundamentals of a very hot and trending area known as “wearables.”

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<tbody>
<tr>
<td><strong>2. PythonBot</strong></td>
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</tr>
<tr>
<td>Dates: Oct. 5th to Oct. 26th (Wednesdays)</td>
<td></td>
</tr>
<tr>
<td>Times: 3:45 – 5:15 pm</td>
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</table>

TinkRers will use Python, one of the most commonly used and versatile programming languages available, to draw computer-generated pictures and control a Lego robot. They will build foundational Python skills as they use a virtual pen tip (known as “turtle”) to draw cool graphics. They will learn to use loops, conditionals, and other coding concepts and then apply these skills to give a Lego Mindstorms robot an ability to make decisions and interact with its environment in a manner the TinkRers themselves will determine.

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*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com*
Ages 12-14 (continued)

For the 12-14 age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Ages 12-14 Exploration-Track Projects, cont. (4 weeks each)*

3. Robo-Safe

Dates: Nov. 9th to Dec. 7th (Wednesdays)
Times: 5:15 – 6:45 pm
Introductory pricing: $339

TinkRers will be excited and delighted to build a robotic smart box—essentially a robot-based safe on wheels—that will keep their secrets safe. During this project, TinkRers will design and construct a functioning robot using a variety of mechanical and electrical components. Once completed, TinkRers will code these Robo-Safes to hide from intruders and only reveal their contents at their owner’s call. TinkRers will develop and use a wide range of disciplines, including electronics, coding, and traditional making skills to craft their privacy-protecting pals. Naturally, like other TinkRworks Engagement-Center projects, TinkRers will get to take home their bots once they are done!

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com
Ages 12-14 (continued)

For the 12-14 age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

Ages 12-14 Emphasis-Track—CODING (12 weeks)*

4. Coding Emphasis Track: Internet of Things

Dates: Nov. 2, 2016 to Feb. 15, 2017 (Wednesdays)
Times: 3:45 – 5:15 pm
Introductory pricing: $939

During this quarter-long track, TinkRers will develop a weather station that will become a fully-fledged member of the Internet of Things (IoT), a term used to label items such as a refrigerators, door locks, thermostats, or even coffee machines that are connected to the Internet! These internet-connected devices can be controlled remotely and share data. TinkRers will begin by learning foundational coding skills such as loops, conditionals and variables using Python and then apply these skills to create an application on a Raspberry Pi microcomputer that will collect weather data using sensors that measure pressure, temperature and humidity.

Next, TinkRers will learn the basics of networking and apply these skills to enable their weather station to upload data to the “cloud” in order to record weather trends. They'll even attempt to predict weather by analyzing pressure trends and compare our predictions to outcomes! By combining all these skills, TinkRers will develop a fundamental understanding of what’s needed to design and build internet-connected applications.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com
For the 12-14 age group, in addition to the dates/times below, TinkRers also have access to a 1.5-hour weekly Open Lab session which parents can schedule either ahead of time or during the first session.

**Ages 12-14 Immersion-Track Project (25 weeks)**

**5. Tech-2-Connect**

Dates: Nov. 5, 2016 to May 27, 2017 (Saturdays)

Times: 3:45 – 5:15 pm

*Introductory pricing: $2,249*

TinkRers will dive into communication technologies as they build a messaging system using two microcomputers— an Arduino and a Raspberry Pi. Throughout the year, they will improve their crafting skills, pick up 3D-printing and other automated fabrication knowledge, and learn more about electricity and magnetism, as they take a trip through history all the way back to the telegraph. While going back in time, they will advance their knowledge and understanding of the physical laws necessary for the technology of the future.

TinkRers will begin by exploring the Arduino and will program it using a simple drag-and-drop environment called ArduBlocks that allows exploration without worrying about complex syntax. They will subsequently work with a Raspberry Pi, which is a more powerful microcomputer and will program it using Python, one of the most commonly-used and versatile programming languages available. On both platforms, they will explore electronics by adding lights and sounds to enhance their communications. Next, the TinkRers will learn more about mathematics and computing as they make their communications secret with cryptography. Finally, TinkRers will create a digital presentation about their journey, which they can share on YouTube and other social media, taking advantage of modern advances in communications.

*Dates and times subject to change. For the most up-to-date information on our programs, please visit www.TinkRworks.com*
Sparking CREATIVITY
Fostering INNOVATION
Sharpening PROBLEM-SOLVING skills

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