Cooper Union's Invention Factory

What is "Invention Factory"?

Invention Factory is a summer program for Cooper Union engineering students made possible by a generous donation from the Edward Durbin and Joan Morris Innovation Fund. You will have six weeks (July 17 – August 25) to work intensively with a partner on an invention that you choose (subject to our approval). We will provide a budget of up to $2,000 per team for materials, access to and training on laser cutters and 3D printers and access to our machine shops and machinists. Your presence will be required each day at Cooper, Monday through Friday, 11 a.m. to 5 p.m. – but we expect that you will sometimes want to work late into the night, especially towards the end of the program. We will feed you lunch each day. There will be caffeine. You will compete for a first prize of $5,000 and a second prize of $3,000 for "best invention." By the end of the program you will have filed a provisional patent application for your invention with the U.S. Patent and Trademark Office. All participants receive a $1,000 stipend if program requirements are completed by the end of the program.

Why the name "Invention Factory"?

We chose the word "factory" to make clear that we expect your intensive effort for six weeks will yield prototypes of marketable products. We believe that as Cooper engineering students you are so talented that your inventive efforts have a good chance of succeeding in the marketplace. As this is a summer program, you will be developing your invention in a supportive environment free of classes and other obligations.

Will I be applying for a patent?

By the end of the program you will file a provisional patent application with the U.S. Patent and Trademark Office. A provisional application is nothing more than a detailed description of your invention including drawings. While Cooper Union has not finalized a general patent policy as of the date of this document (February, 2016), inventions produced through Invention Factory will be the sole intellectual property of the student inventors. Your provisional application will give you limited protection of your invention for one year from the date the

application is filed. If you and your partner wish to commercially exploit your invention and seek an enforceable patent, you should file a non-provisional application within that one-year window. (Don't worry about the terminology, we'll teach you a fair amount about patent law during the program.)

Who can apply?

All matriculating Cooper Union engineering students in good standing may participate in the program. This includes current seniors who will have graduated just before Invention Factory starts in July.

How do I apply?

Selection for the program is competitive. We select approximately twenty students each year, who will participate as ten teams of two. You will find the application form at www.inventionfactory.org

Applications are accepted until the end of March, unless we have filled the program with 20 students at an earlier date. Applicants will be evaluated on a rolling basis, so it is best to apply early. We will interview all applicants – probably during club hours.

The online application form asks for your name, contact information, and up to 500 characters (which may include URL's to some of your work) to persuade us that you are a good fit for Invention Factory. (Yes, the text box on the application form is small, but you can paste up to 500 characters into it.)

What kind of invention might I work on?

Look at inventions from the first four years of Invention Factory. At www.inventionfactory.org you can watch videos of all inventions produced during I.F. 2014, 2015, 2016 and four videos of inventions produced during I.F. 2013.

You will choose your project (and your partner) during the first week of the program. A *critical* focus of the selection process is determining that your invention addresses a real *need* -- a consumer need, a societal need, or both. We don't want you to invent a particular widget for the reason that you *CAN* invent that widget – the world may not *need* it, and therefore may not be willing to pay for it. You will have to convince us that there is a need for your invention before we approve your project.

Another important criterion will be feasibility. We want you to have (or be able to quickly develop) the expertise/skills necessary to complete a working prototype of the invention within the 6-week program. This precludes overly ambitious proposals such as tissue engineering and nanostructures. Other constraints on project selection: no chemical inventions and nothing that would require IRB approval (i.e., involving human subject experimentation).

To use a little patent terminology, we are looking for inventions that can yield "utility patents" (inventions that perform a useful function, not purely ornamental creations that could receive a "design patent"). Your invention must be both "novel" and "non-obvious" – which mean, respectively, that you must be the first to invent this thing, and your invention must be, in some sense, non-trivial. Your invention may be an improvement of someone else's existing invention.

Your invention must have commercial potential ("need"). Your invention must be something *tangible* – something you can build. You will spend much of your time making, testing and refining a prototype of your invention -- and demonstrating it to others. Your invention may involve software, but it cannot consist entirely of software (e.g., a cellphone app).

What if I haven't invented something before?

You are a Cooper student. Believe in yourself. We believe in you.

Is this an entrepreneurship program?

No! There will be no writing of business plans, considerations of marketing or seeking venture capital. This is a program in *inventing*.

Is this a summer version of EID103?

No. While we admire the "Lean philosophy" and incorporate its basic tenet into the program (you must persuade a majority of the other student participants, and at least one of the two of us that there is a need/market for your invention by the end of the first week), this is not a course in Lean methodology. Nor is it a class (for credit).

What are the deliverables at the end of the program?

You will file a provisional patent application that will be backed up by a prototype that you have developed and tested. Cooper will pay the filing fee for your provisional application.

You will present your invention to a jury that will include engineers, patent lawyers, consumers, venture capitalists and others. Your presentation will include a short video that demonstrates your invention. The jury will select the first and second prize winning "best inventions."

What do I get if I win?

$5,000 for first prize. $3,000 for second prize.

What do I get if I don't win one of the two prizes?

An exciting summer experience. Pizza/Thai Food/Chipotle. A cool Invention Factory T-shirt. An invention that you may want to bring to market through Kickstarter or with the help of a VC. Perhaps you will enter your invention into a larger competition (e.g., the Lemelson-MIT Student Prize). You will learn just enough about patent law to help you protect any inventions you might develop in the future.

How will the program be structured?

After you are accepted into the program, but before Invention Factory begins, you will be sent a few warm up ("ideation") exercises by email to get your creative juices flowing. We know that final exams will be approaching, so the exercises will not be very time consuming. But the exercises are required. They may be solo exercises or we may require that you work with one other admitted student.

Once the program starts, by the end of the first week you will have selected your partner, identified your problem, studied the "prior art" (is your invention new? Is it (in the patent law sense of the term) obvious?), and you will learn how to use the laser cutter and 3D printers, if you aren't already comfortable with those tools.

By the end of week two, you should have conceptually finished the design of your invention and ordered any required components. You will likely be working on your first prototype.

Weeks two through six will focus on building and refining prototypes, testing your invention, subjecting your prototype to critiques from other members of the program as well as outsiders. Critiques will focus on the need for your invention, whether your invention meets that need, and diverse practical considerations (safety, size, weight, and cost). Everything you do must be documented. You will likely be taking photographs, producing short video clips, and perhaps making CAD animations for inclusion in your weekly presentations to "guest evaluators."

There will be plenty of unstructured time for you to develop and refine your invention.

Who is the "we" you keep referring to?

The program will be overseen by Professors Eric Lima and Alan Wolf. Eric Lima is a professor of mechanical engineering and an avid DIY builder. He teaches several of the design classes in the mechanical engineering department. He holds 3 patents. You can learn more about him and some of his projects at https://engfac.cooper.edu/lima2 . Alan Wolf is a professor of physics, a registered patent attorney, and has taught patent law courses at Cardozo Law School and at Cooper Union. You can learn more about him and his activities (including supervising provisional patent applications drafted by Cooper students) at https://engfac.cooper.edu/wolf .

Additional FAQ

Who will own my work?

You and your partner will be co-inventors in the eyes of the Patent Office. While Invention Factory funds will pay the nominal cost of filing your provisional patent application (currently $65), The Cooper Union does not retain any interest in your invention or any obligation to help you develop it further (e.g., underwrite the cost of filing a non-provisional patent application). If you want to protect your inventor after the provisional application expires (one year from filing) you and your partner should file a full patent application.

When will I get my stipend?

You will receive your stipend shortly after the end of the program provided that you have completed all program requirements on time (attendance, a working prototype, presenting your invention to the judges on 'judgment day,' a filed provisional patent application, etc.). Development of the professional videos you see at www.inventionfactory.org may extend beyond August 25. Raw video will probably be shot in the sixth week of the program, but some post-production work may run into the following semester.

Do I have to pay taxes on my stipend?

The IRS says a stipend is reportable income. Of course, depending on a number of factors, you may not owe any taxes in a given year or you may be entitled to a refund.

What ultimately happens to all of the materials my partner and I purchase with our project budget?

You and your partner will have a budget of up to $2,000 for materials. Anything you purchase from that budget that does not appear in your final prototype will remain the property of Invention Factory. You are free to retain your final prototype, once we have completed all photography and videography required for promoting the Invention Factory program.

Must I work with a partner?

Yes, unless we accept an odd number of students into the program. If you want to work with a friend, the two of you should apply separately and there is no guarantee that we will accept both of you. Teams will form by the end of the first week of the program.

What if I don't find a partner / don't like my partner / my partner quits halfway through the program?

Yes, we can expect some of these issues to arise, just as they do in the "real world." We will deal with such problems as they arise.

Can I work in a group of 3?

No.

Is this program only open to engineering students?

Yes.

Will there be classes?

There will be a few sessions in which we discuss writing a patent application, teach you how to use a laser cutter (if you haven't already done that), and similar things. These will be informally structured, without tests or grades, and they will mostly take place in the first week. We may offer a few more as needed or as the opportunity arises. But mostly this program is about giving you the support and resources to develop an invention without distractions.

Can I get academic credit for participating?

No.

Can I continue a project that I am already working on?

No.

During Invention Factory can I also… (work at a job/take a course at Cooper or elsewhere/ participate in an externship)?

No. Not even if the work/course/etc. takes place before or after the 'official' program hours of 11 a.m. to 5 p.m. Not if the job/course/etc. has ANY overlap with the period between July 17 – August 25.

Do I have to sign a photo/video release to participate in Invention Factory?

Yes. Videos and still images of Invention Factory participants, their inventions and their presentations help to promote The Cooper Union, the Invention Factory program, and the School of Engineering. We therefore require that participants sign the standard Cooper Union photo/video release and participate in the making of I.F. videos. You will be provided with a copy of the release to review

and sign if you are admitted into the program. I.F. Videos will generally be posted at http://www.inventionfactory.org/ (which links to YouTube videos) as well as other web sites.

Do I really need to be there from 11 to 5 every weekday?

Yes. And one late night each week, in weeks 2 through 5, when you present to "guest evaluators." You and your partner will either consistently present on Tuesday evening or on Thursday evening. Those sessions may run as late as 7:30 p.m.

I have to leave a week early, or mid-day each [some day of the week]. Is that okay?

No.

What will I be judged on?

Identifying a need, meeting that need, and meeting the need *practically*. While there may be a need for an improved can opener, it probably shouldn't weigh 100 lbs., cost $1000 or emit gamma rays.

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