

Monday, Thursday 3:30-5:30
Saturday 9-noon

High School Apprenticeship Challenge 2016

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MASSACHUSETTS
LIFE SCIENCES CENTER

BioBuilder
Educational Foundation

 NOVARTIS

Lab | Central

MIT BE
BIOLOGICAL ENGINEERING

Week#	Monday, 3:30-5:30 @MIT 26-302	Thursday, 3:30-5:30 @MIT 66-168	Saturday, 9A-noon @MIT 56-322
1	3/21 Orientation	3/24 Project Selection	3/26 Lab Orientation
2	3/28 Science/Engineering (Eau that Smell)	3/31 Project groups + Lab Math	4/2 Solution Prep/Microbiology
3	4/4 Science/Engineering (DNA extraction)	4/7 Project groups + Lab notebook keeping	4/9 Titration curves/DNA prep
4	4/11 Science/Engineering (Colorful World)	4/14 Project groups + Lab protocol writing	4/16 DNA digest + electrophoresis
April Vacation week 4/18-4/24			
5	4/25 Science/Engineering (Reading the literature)	4/28 Project groups: Presentations of ideas	4/30 Protein induction + PCR/DNA sequencing
6	5/2 Science/Engineering (Golden Bread)	5/5 Project groups + online sequence analysis	5/7 SDS PAGE
7	5/9 Science/Engineering (careers, meet & greet) @LabCentral	5/12 Project groups + Resume writing	5/14 Enzyme assays
8	5/16 Project summaries + program evaluation	5/19 Formal Presentations + graduation event @Novartis	

Overview

This 8-week program is designed to close any skills gap students may have so they can progress into a successful summer internship in a life science company or academic lab.

Goals

We will focus on three aspects that lead to successful life science careers

- **Content knowledge:** we will spend several hours each week working with synthetic living systems to gain familiarity with terms and details of science and bioengineering
- **Laboratory techniques:** we will spend several hours each week in a research lab carrying out experiments to train hands and minds for benchwork
- **Professional skills:** we will work in small teams to imagine, research and design a biotechnology. Teams will document then present their ideas – leading to important gains in motivation, initiative, listening skills and experiences interacting with others.

Requirements

Students are expected to bring their best selves to our program. This means students will

- Come with an open mind
- Come with energy to engage with the challenges
- Work collegially and constructively
- Tell people who need to know if there is a problem

Students who fail to attend regularly, who fail to notify instructors of absences or tardiness, who are not paying attention during class or lab, or who are distracted during work times WILL NOT be guaranteed a summer internship and MAY NOT receive the stipend associated with our 8-week onboarding program.

Evaluation

Students will be offered constructive criticism throughout our program. Comfort with scientific content is important but equally important is the motivation and enthusiasm students show for working together, and their ability to listen, to discuss and to accept direction or criticism. Troubleshooting laboratory experiments will be valued at least as much as good hands at the bench.

I have read the above and agree to participate as described.

Signature

Date

Materials

Students will receive four books that must be brought to class every time

- [Lab Math](#)
- [At the Bench](#)
- [BioBuilder: Synthetic Biology in the lab](#)
- a blank lab notebook

Milestones

March 21st 2016

Orientation meeting:
MIT 26-302
Sign commitments

March 26th, 2016

Laboratory
orientation

April 28th, 2016

Midway project
presentations

May 9th, 2016

Career focus events

May 19th, 2016

Final project
presentations and
graduation events