

## PLTW Conference – One8 Grant Opportunity

October 18, 2021

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- A woman with glasses and a red sweater is smiling and presenting a book to a group of people. The background is a blurred community event with other people and a blue sign that says "PLTW".
1. Share an overview of PLTW in Massachusetts
  2. Share about the grant opportunity
  3. Answer questions



# MASS STEM HUB

one8  
FOUNDATION

Our **WORK** focuses in three areas:

Best in class applied  
learning + STEM education

Dedicated educator support  
& resources

Authentic partner  
engagement

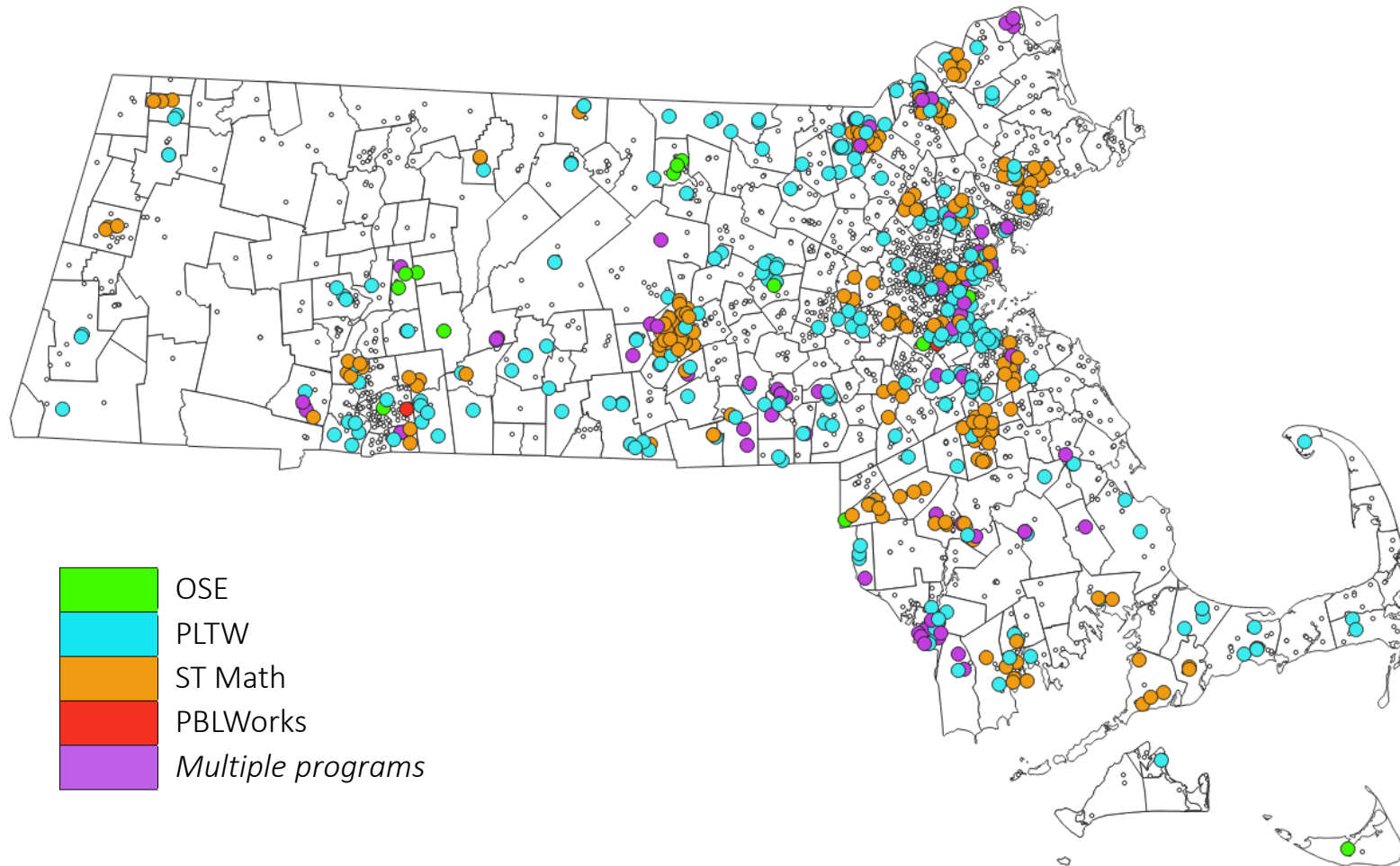




Our **MISSION** is to provide schools with access to and support for applied learning and STEM education that builds knowledge and skills students need to succeed in a rapidly-changing, high-tech world

# We work with over 525 schools in MA across four different programs

SY 21-22 One8 School Footprint



# Project Lead The Way offers hands-on applied learning for students K-12 with a focus on CS, biomed, & engineering

## Elementary

- 10-hour modules
- Full NGSS coverage 20-21
- Students engage in critical and creative thinking, teamwork, and perseverance
- *Example: Building a device to rescue a tiger*

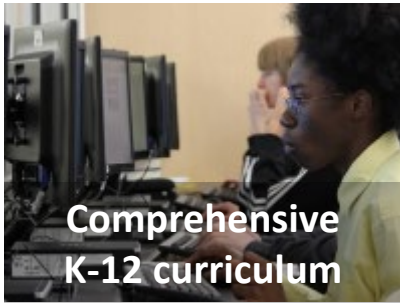
## Middle school

- 10-week units
- Hands-on projects support student-led learning, and drive deep comprehension
- *Example: Developing a toy for a child with CP*

## High school

- 3 dedicated pathways: Computer Science, Biomedical, Engineering
- Full-year courses, including senior capstones
- College credit based on AP-like exam
- *Example: 3D printed hand for a classmate*

# PLTW increases student preparedness for and interest in STEM by offering high-quality applied learning K-12



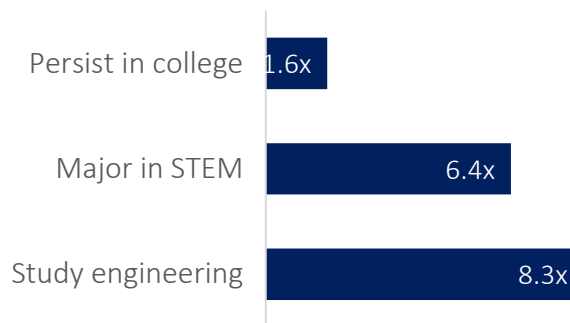
*Project Lead The Way's impact has been validated by research*

## Achievement

PLTW students outscored non-PLTW peers in math & science (+5 points in math and science, 0.15 standard deviation/0.05 sd respectively)

## Higher education

PLTW Students v. Non-PLTW Peers\*



## Premier endorsement



*PLTW is just one of four programs endorsed by Change the Equation as ready to scale nationwide.*

\* Results for PLTW students are for students who completed 3+ PLTW courses, statistically significant impact was also found for students who completed only 1 course.

Sources: Academic Achievement: Schenk et. al (2011), "A Study of the impact of PLTW on achievement outcomes in Iowa", Iowa Dept of Education; Higher Ed Outcomes: Pike et al. (2014), "Using propensity scores to evaluate education programs", Indiana Univ.-Purdue Univ.-Indianapolis.

There is tremendous support and momentum for PLTW in MA as we open applications for our sixth grant cohort

## **Baker-Polito Administration Awards \$1 Million Grant to Develop STEM High-Quality Career Pathways for Students**

First-of-its kind grant will increase access to project-based STEM courses across Massachusetts

## **Baker-Polito Administration Awards \$1.7 Million to Help More Students Study STEM**

**BOSTON** — The Baker-Polito Administration today announced \$1.7 million in school grants to expand computer science, engineering, and biomedical science education for students at 73 schools across the Commonwealth in grades K-12

Grants for 21-22 school year are now open



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# This year's grant looks to replicate last year's efforts to expand and improve PLTW in Massachusetts

## School eligibility

- Open to all **public** schools, **K-12**
  - Current schools to expand current programs
  - Current schools to adopt new programs
  - New schools to adopt for the first time
- Competitive preference to schools that students from **economically disadvantaged** backgrounds
- Competitive preference to districts building **pathways** across schools

## PLTW programs

- All PLTW programs included for in-school implementation
  - Launch (grades K-5 -*targeted pathways*)
  - Gateway (grades 6-8 -*targeted courses*)
  - HS Engineering (*targeted courses*)
  - Biomedical
  - Computer Science

# So what makes a compelling application for the Massachusetts grant?



## Meaningful and sustained student exposure to the program

- Two modules at each grade level for Launch K-5
- One course per year at the middle school level
- Three course pathway at the high school



## Plan for significant student participation over time

- 100% students participating at the K-5 level by year 3
- 75% of students participating grades 6-8 by year 3
- 15-25% of high school students participating by year 3



## Teacher and leader champions



## Plan to financially sustain the program after the grant

# Grants are intended to defray the start up costs associated with a new program or significant expansion

## Allowable expenses

- Core Training
- Program required durable equipment and supplies
- Required computers and/or tablets (*per PLTW device ratio guidelines*)

## Unallowable expenses

- Participation Fee
- Consumables
- Salaries or stipends or benefits
- Meals
- Infrastructure or renovations
- Indirect Costs
- Equipment and supplies listed as "Optional"

# For target grant size, school should use standard PLTW grants as a model

**PLTW STANDARD:** Vast majority of budgets should align to standard PLTW grants

**MAXIMUM AWARD:** Robust implementations may seek additional funding, based on:

- # of students reached at the school level
- # of modules/units/courses offered
- # of teachers trained



Program	Standard	Max
Launch (K-5)	\$11,000	\$20,000*
Gateway (6-8)	\$25,000	\$45,000
HS Comp Science	\$25,000	\$35,000
HS Engineering	\$40,000	\$55,000
HS Biomedical	\$45,000	\$75,000

## Funding notes:

- **Allowable funds:** PLTW training, required equipment & materials, required computer hardware
- **Unallowable funds:** Participation fee, consumables, teacher stipends, meals, indirect costs, optional equipment
- **Fund disbursement:** Over three years for new program implementation grants

# Schools are highly encouraged to adopt supported units & courses for middle school and high school engineering

## Launch

**Two recommended pathways**  
– each with 2 modules at each grade level -- from which to choose

1. **PLTW STEM Greatest Hits:** perfect for STEM special to reinforce core science, address Engineering standards, and provide high quality applied learning
2. **Computer Science pathway:** K-5 CS strand with additional STEM modules to round out a STEM + CS experience

## Gateway

- Design & Modeling
- Automation & Robotics
- CS for Innovators & Makers
- App Creators
- Medical Detectives

## High School

**Biomed:** all

**Comp Sci:** all

### Engineering

- Into to Engineering Design
- Principles of Engineering
- Computer Integrated Manufacturing
- Civil Engineering & Architectures
- Engineering Design & Development (*Capstone*)

# The Massachusetts specific grant opportunity seeks to minimize additional requirements

- Implement PLTW according to your school's grant plan
- Attend grant **convening** in March (exact dates TBD)
- Complete required PLTW training (@ WPI or UMass Lowell)
- Administer **end-of-course assessments** to all PLTW enrolled students (*high schools only*)
- **Roster** students in the PLTW system and the DESE reporting system by Oct 1
- Attend PLTW Massachusetts **Conference**
- Administer student & teacher annual **survey** (*grades 6-12 for students*)
- Complete **financial** report

# The first part of the application is due November 19<sup>th</sup>

## Part 1 of Application

- Due Nov 19<sup>th</sup>
- Accessed through myPLTW
- Utilize the “**Save and return later**” functionality
- One application per school per program
- One application allows your school to be considered for multiple grant opportunities

## Part 2 of Application

- Due Jan 19<sup>th</sup> (invites out Dec 3<sup>rd</sup>)
- Completed online
- Seeks additional programming detail and grant budget



# Next steps

- Visit the PLTW website: [www.pltw.org/grants](http://www.pltw.org/grants) and create a myPLTW account to access the application
- Plan for the PLTW programs you want to offer
  - Gather buy-in at the teacher, school leader, and district level
  - Consider budget for the short and long term
  - Select a teacher
  - Determine scheduling
- Take advantage of MA-specific grant opportunities
  - Reach out to Suzie or Lily with questions
  - See about visiting another school to see programming in action (get in touch – we can help!)

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*For more information, please contact:*

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MASS **STEM** HUB

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**Lily Ornelas**

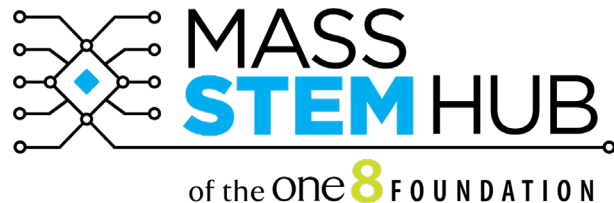
DSE for Massachusetts

[Lornelas@pltw.org](mailto:Lornelas@pltw.org)

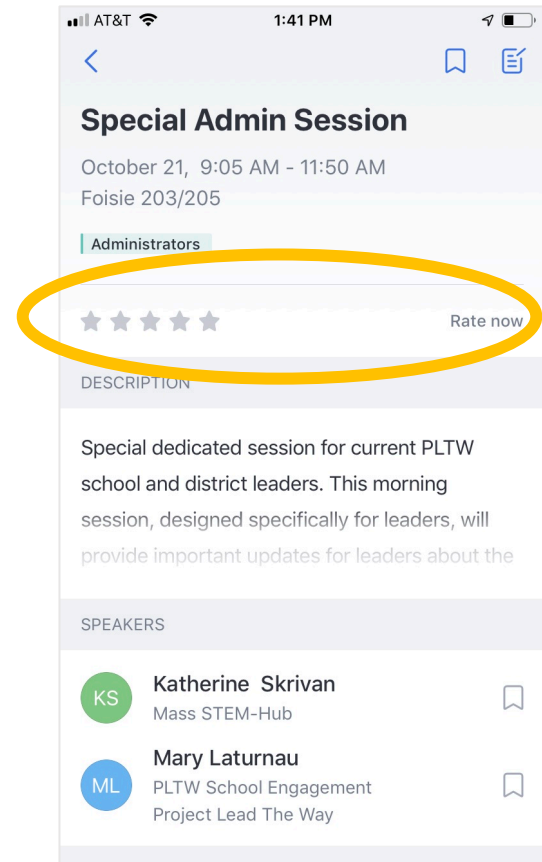
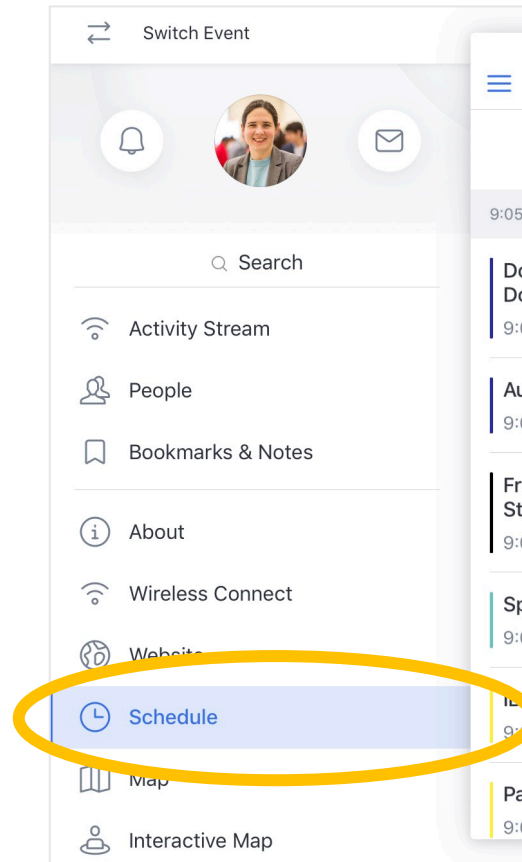
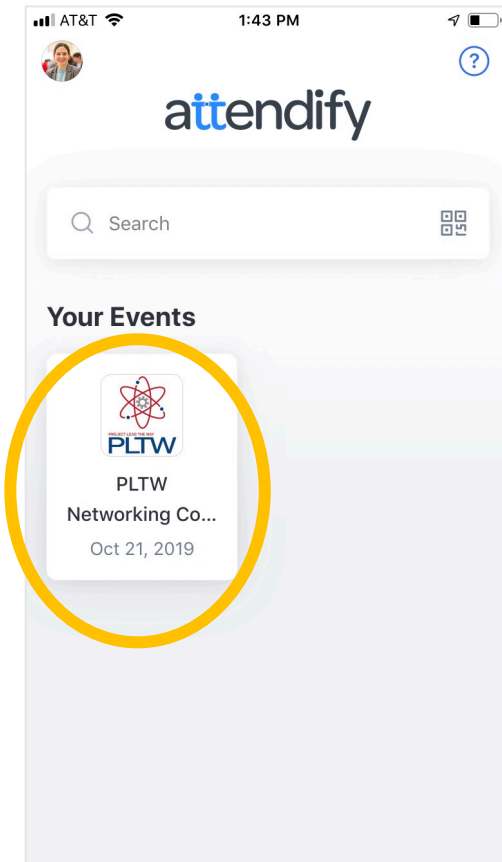
**Suzie Snow**

DSE for Massachusetts

[ssnow@pltw.org](mailto:ssnow@pltw.org)



# Rate this session in the conference app!





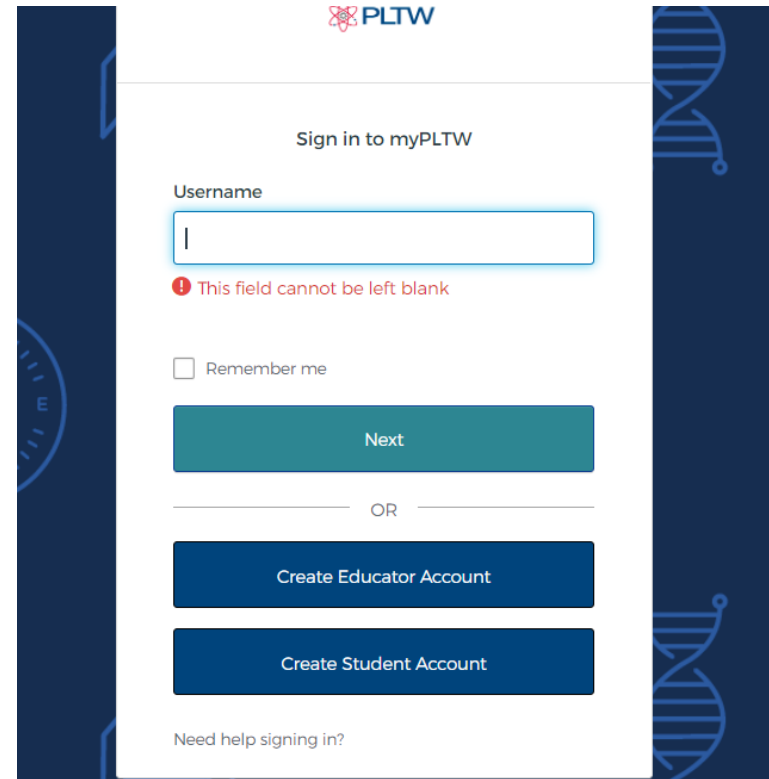
THANK YOU

# BACKUP

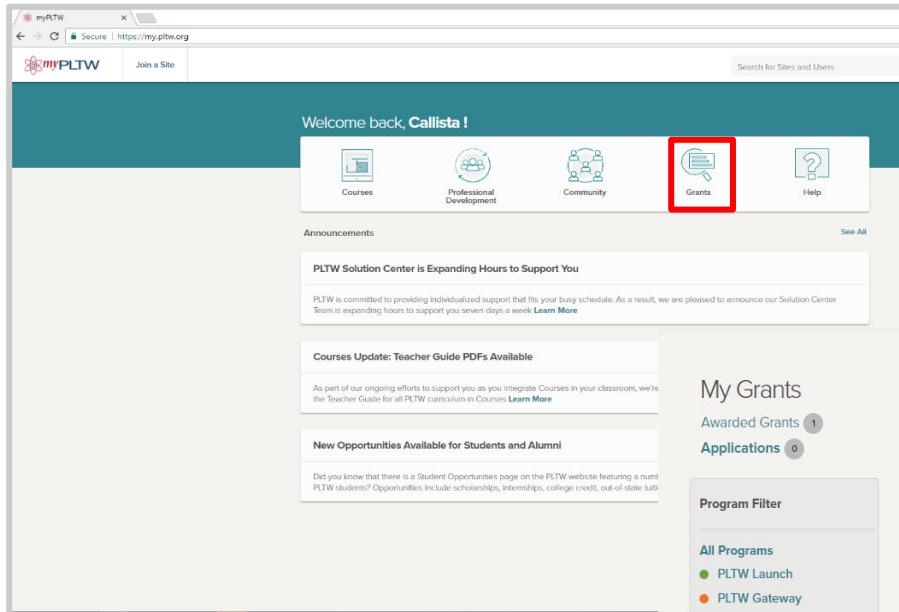
# Log in or Create Your myPLTW Account

If you need to create an account:

1. Visit my.pltw.org
2. Click Create Account.
3. Complete all form fields.
4. Read the terms of service and click the "I have read and agree to the terms of service" checkbox.
5. Click Create your Account.
6. Verify your email and login to myPLTW.

A screenshot of the myPLTW login page. At the top right is the PLTW logo. The main heading is "Sign in to myPLTW". Below this is a "Username" label and a text input field containing a single vertical bar. A red error message below the field reads "This field cannot be left blank". Underneath is a "Remember me" checkbox. A teal "Next" button is positioned below the checkbox. A horizontal line with "OR" in the center separates the login section from the account creation section. Below the line are two dark blue buttons: "Create Educator Account" and "Create Student Account". At the bottom left of the form area, there is a link that says "Need help signing in?". The page is framed by a dark blue border with decorative elements like a DNA helix and a gear.

# Get to know the Grant Section of myPLTW



## My Grants

Awarded Grants 1

Applications 0

### Program Filter

#### All Programs

- PLTW Launch
- PLTW Gateway
- PLTW Computer Science
- PLTW Engineering
- PLTW Biomedical Science

### Status Filter

#### All Statuses

- Submitted
- In Progress
- Expired

You currently have no applications.

[Start an Application](#)





# PLTW Launch Modules

Key: Comp Science; engineering; biomed

## Option 1 – Greatest Hits

Recommended modules:

- K.1 – Structures and function
- K.2 – Pushes and pulls
- 1.1 – Light and sound
- 1.4 – Animated storytelling
- 2.1 – Properties of matter
- 2.4 – Grids and games
- 3.2 – Stability and motion: forces & interactions
- 3.4 – Programming patterns
- 4.1 – Energy collisions
- 4.2 – Energy: conversions
- 5.1 – Robotics and automation
- 5.5 – Matter: Properties and reactions

## Option 2 – Computer Science plus

Recommended modules:

- K.1 – Structures and function
- K.4 – Animals and Algorithms
- 1.1 – Light and sound
- 1.4 – Animated storytelling
- 2.1 – Properties of matter
- 2.4 – Grids and games
- 3.2 – Stability and motion: forces & interactions
- 3.4 – Programming patterns
- 4.3 – Input/output: Computer systems
- 4.4 – Input/output: human brain
- 5.4 – Infection: modeling and simulation
- 5.5 – Matter: properties and reactions



### Estimated cost

Average elementary school (400 students, ~65 students per grade)

	Implementation year	Ongoing years
<b>Total module cost</b>	\$8,729	\$1,892
Durable cost	\$7,468	\$0
Consumable cost	\$1,261	\$1,892
<b>Participation Fee</b>	\$950	\$950
<b>Training (2 classroom teachers)</b>	\$1,560	\$0
<b>Training (lead launch teachers)</b>	\$1,960	\$0
<b>TOTAL</b>	<b>\$13,199</b>	<b>\$2,842</b>
Cost per student	\$34	\$7
Grant subsidized costs (durables, training)	\$10,988	


### Estimated cost

Average elementary school (400 students, ~65 students per grade)

	Implementation year	Ongoing years
<b>Total module cost</b>	\$4,410	\$2,007
Durable cost	\$3,072	\$0
Consumable cost	\$1,338	\$2,007
<b>Device costs</b>	\$1,750	\$0
<b>Participation Fee</b>	\$950	\$950
<b>Training (2 classroom teachers)</b>	\$1,560	\$0
<b>Training (lead launch teachers)</b>	\$1,960	\$0
<b>TOTAL</b>	<b>\$10,630</b>	<b>\$2,957</b>
Cost per student	\$27	\$8
Grant subsidized cost (durables, devices, training)	\$8,342	

**Notes:** All durable kits are shared within a grade level, including for VEX modules (3.2, 4.1, 5.1) especially given higher cost for VEX equipment. Consumable kits serve 30 students. In year 1, additional consumable kits are purchased if needed. Costs do not include launch logs. Training includes training fee and lodging.

# PLTW Gateway Units

 9 Weeks/Unit



Design and  
Modeling



Automation  
and Robotics



App  
Creators



CS for Innovators  
and Makers



Medical  
Detectives

***Massachusetts supported units***



Flight and  
Space



Science of  
Technology



Magic of  
Electrons




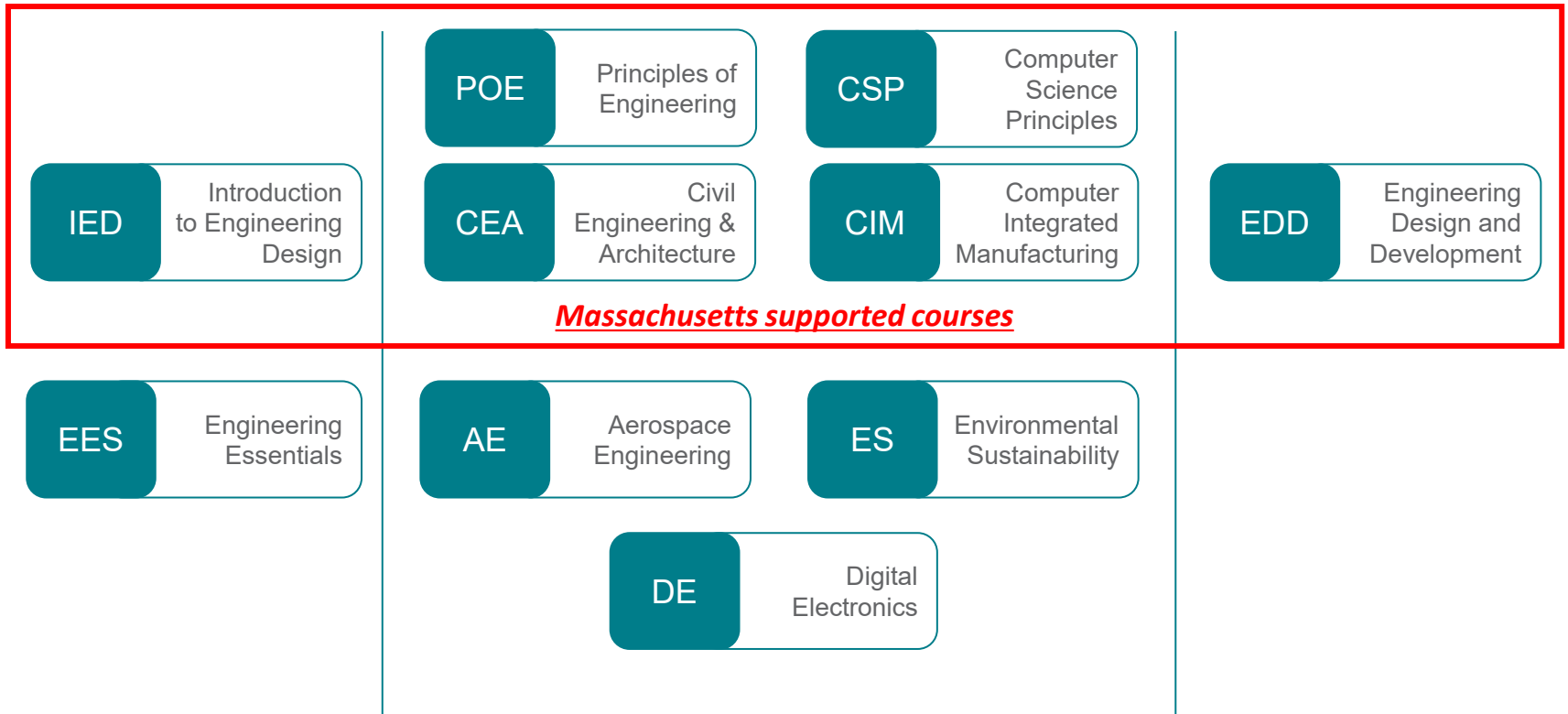
Green  
Architecture



Energy &  
Environment


# Engineering Courses

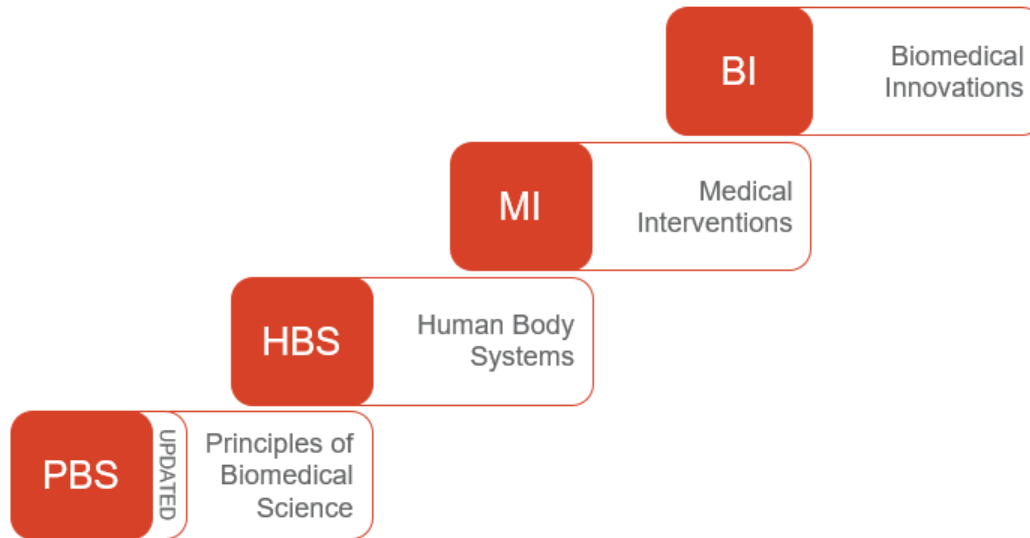
 1 Year/Course





# PLTW BMS Courses

 1 Year/Course




PLTW





# PLTW CS Courses

 1 Year/Course

**CSE** Computer Science Essentials

**CYBER** Cybersecurity

**CSA** UPDATED Computer Science A

**CSP** UPDATED Computer Science Principles

