



ENGINEERING  
byDesign™

STEM Center for Teaching and Learning™

1914 Association Drive  
Suite 201  
Reston, VA 20191-1539

Phone: 301-482-1929  
FAX: 888-247-2113

Engineering byDesign™  
Agreement and Application  
FY2013-2015

Thank you for your interest in the Engineering byDesign™ Standards-based Model Program.

The STEM Center for Teaching and Learning's™ Engineering byDesign™ (EbD™) program is a K-12 solution for states, school districts and schools wanting to deliver an engineering/technological literacy curricula through science, technology, engineering and mathematics (STEM.) In only the fourth year of existence, EbD™ now includes over 350 participating schools nationwide. The EbD™ Network links schools and teachers that believe that the ingenuity of children is untapped, unrealized potential, that properly motivated, will lead to the next generation of technologists, innovators, designers, and engineers.

ITEEA's STEM Center for Teaching and Learning's™ (formerly the Center to Advance the Teaching of Technology and Science) has developed the only standards-based national model for Grades K-12 that delivers Technological Literacy. Engineering byDesign™ is a national Model Program that was developed in with the collaboration and leadership of a consortium of states, the Technology Education Advisory Council, ITEEA Institutional Members, and the Science, Mathematics and Engineering Community. The model, called Engineering byDesign™ is built on the Standards for Technological Literacy (ITEEA); Principles and Standards for School Mathematics (NCTM); and Project 2061, Benchmarks for Science Literacy (AAAS). Using a constructivist model, students participating in the program learn concepts and principles in an authentic, problem-based environment. Using a STEM focus, students are prepared to be technologically and engineering literate by Grade 12.

I hope that you will consider joining the "Network" and bring technological and engineering literacy to students while achieving higher gains in all aspects of the school program. The attached Agreement and Application is one way to ensure that the teacher, school, and district are able to fully utilize a standards-based program for curriculum, instruction and assessment. **By becoming part of the Network, students will be prepared to be successful on the NAEP 2014 Technology and Engineering Literacy Assessment now under development.**

Please complete the entire form (if you have a hard copy, download the formfill version at <http://www.iteea.org/EbD/Resources/EbDresources.htm> and click on the [Network Application and Agreement.](#)) Once complete with signatures it can be submitted electronically (pdf files only) to [bburke@iteea.org](mailto:bburke@iteea.org). If faxing the completed signed agreement, please use the "super-fine" resolution so that the agreement is received in readable condition. Please mail the original to the address on page 4.

Upon receipt of the signed Application, you will be notified of acceptance via email and hard copy letter. The email correspondence will convey important enrollment information for the ebDONLINE™ learning community. Should you have any questions, please don't hesitate to contact me.

Sincerely,

*Barry N. Burke*

Barry N. Burke  
Director, STEM Center for Teaching and Learning™



Standards-Based Integrative STEM Model  
for Grades K-12

Grade	Course	Duration
K-2	EbD-TEEMS™ Technology Starters/KITS	
3-5	EbD-TEEMS™ IP/KITS	
6	Exploring Technology	18 weeks
7	Invention and Innovation	18 weeks
8	Technological Systems	18 weeks
9	Foundations of Technology	36 weeks
10-12	Technology and Society	36 weeks
10-12	Technological Design	36 weeks
11-12	Advanced Design Applications *	36 weeks
11-12	Advanced Technological Applications *	36 weeks
11-12	Engineering Design (Capstone)	36 weeks

  

Grade	Course	Duration	Grade	Course	Duration	Grade	Course	Duration
9	Foundations of Technology™	36 weeks	9	Foundations of Technology/TEO	36 weeks	9	Foundations of Technology/TEO	36 weeks
10-12	Advanced Engineering	36 weeks	10-12	Scientific Visualization I*	36 weeks	10-12	Scientific Visualization I*	36 weeks
10-12	Robotics & Automation	36 weeks	10-12	Scientific Visualization II*	36 weeks	10-12	Scientific Visualization II*	36 weeks
12	Engineering Design	36 weeks	12	Engineering Design	36 weeks	12	Advanced Science Art & Design**	36 weeks





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**A G R E E M E N T and A P P L I C A T I O N**  
*Engineering byDesign™ Network (EbD™)*

This Agreement between \_\_\_\_\_ (School Name) of the \_\_\_\_\_ (School District) located in \_\_\_\_\_ (City, ST) and the **International Technology and Engineering Educators Association’s (ITEEA) STEM  $\oplus$  Center for Teaching and Learning™ (STEM  $\oplus$  CTL)** Reston, Virginia, will serve to identify what each party is expected to perform over the time that the school is a member of the *EbD™ Network* of Schools. The total term of this commitment is two years provided that the State in which the school resides maintains membership in the **STEM  $\oplus$  CTL** Consortium of States and school fees are paid (if applicable). The Agreement automatically renews at three year intervals. Each party agrees to the following:

**School Application**

The school system submits this application to ITEEA- **STEM  $\oplus$  CTL** that indicates its intention to implement the following EbD™ course(s)/Elementary building blocks. Please confirm by checking the box to the left of the course(s) that will be implemented.

<input type="checkbox"/> Exploring Technology (Grade 6)	<input type="checkbox"/> EbD-TEEMS (Grade 3)	<input type="checkbox"/> EbD-TEEMS (Grade K)
<input type="checkbox"/> Invention and Innovation (Grade 7)	<input type="checkbox"/> EbD-TEEMS (Grade 4)	<input type="checkbox"/> EbD-TEEMS (Grade 1)
<input type="checkbox"/> Technological Systems (Grade 8)	<input type="checkbox"/> EbD-TEEMS (Grade 5)	<input type="checkbox"/> EbD-TEEMS (Grade 2)

  

<input type="checkbox"/> Foundations of Technology (Grade 9) <input type="checkbox"/> Technological Design (Grades 10-12) <input type="checkbox"/> Technology & Society (Grades 10-12) <input type="checkbox"/> Advanced Design Applications (Grades 10-12) <input type="checkbox"/> Advanced Technological Applications (Grades 10-12) <input type="checkbox"/> Engineering Design (Grade 12 – capstone)	<p><b>Agreement Begins:</b> FY _____</p> <p><b>Agreement Ends:</b> FY _____</p> <p><i>Note: Agreements automatically renew</i></p>
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The School agrees to the following stipulations as part of the Agreement:

- Curriculum:** As part of the Agreement, each teacher at the school is provided unlimited access to the EbDPortal™ for the MediaRichedition™ (MRe) course guides. EbD™ Network schools and teachers agree to follow the scope and sequence for the course and to deliver the content using the Units and Lessons contained within the model Course Guides without modifications. During the term of the Agreement, updates to the course guides are provided as part of the annual fee. Middle school teachers use a combination of the Portal recommendations and the EbD™ Online Assessment to determine which units to teach in shortened time periods (4, 6, 9 or 12 weeks.)
- Instruction:** As part of this agreement, teachers from the Network School will be provided professional learning opportunities to ensure that the content within the Units and Lessons are delivered consistently. This will include a range of opportunities that are synchronous (face to face) and asynchronous (electronic through ebDONLINE™). EbD™ Network Teachers agree to become actively engaged in these opportunities.
- The school system will create and sustain an EbD™ Collaboration Team. The team consists of (but is not limited to) representatives from the technology, mathematics, science, English, and counseling departments in the school, as well as one or two representatives from the community (PTA /engineering communities). If more than one school in a school district is participating in the EbD™ Network, one Collaboration Team may be created with representatives from each school.
- Every effort will be made to have the EbD™ teacher(s) attend the ITEEA Annual Conference and participate in sessions designated for the EbD™ Network. These sessions are essential to the value-added components of the Network and for classroom instruction.
  - While it is highly advantageous for teachers to participate in the face to face training at conference, economic conditions may limit this participation.

5. **Using the Ebd™ Online Assessment:**
- a. The purpose of the Ebd™ Online Assessment is to provide student data/information for teachers that informs their classroom instruction.
  - b. The STEM  $\oplus$ CTL's goal is to deliver uniform and equitable testing environments. For assessments to yield fair and accurate results, the assessment must be administered in consistent and standardized conditions. The best way to ensure that occurs is for all teachers and administrators to understand and recognize acceptable and unacceptable practices. **As part of this agreement, users agree that it is a violation of test security for an individual to:** Give examinees access to secure test items or materials before testing;
    - i. Create "fake" student accounts for which the teacher can access the assessments;
    - ii. Copy or reproduce all or any portion of any secure test screen;
    - iii. Use cell phones, electronics, or digital devices by test administrators, proctors or students during testing;
    - iv. Give unauthorized individuals access to secure test items or materials;
    - v. Copy, reproduce, use, or otherwise disclose in any manner inconsistent with test security regulations and procedures any portion of secure test materials;
    - vi. Provide answer keys or answers orally, in writing, or by any other means, to examinees;
    - vii. Coach examinees during testing by giving them answers to test questions or otherwise directing or guiding their responses or altering or interfering with examinees' responses in any way;
    - viii. Fail to follow security regulations and procedures for distribution and return of secure test materials, or fail to account for all secure test materials before, during, and after testing;
    - ix. Fail to properly monitor test administration, including permitting inappropriate collaboration between or among individuals;
  - c. For each course within the Agreement, teachers will access the EbdPortal to have their students take the ITEEA/Ebd™ online pre-tests and end-of-course assessment as well as the design challenge (end of course). *Elementary assessments begin at Grade 3.* Unique State student ID numbers are used to distinguish between students for assessment and reporting purposes at the school level. Data will be collected in compliance with FERPA requirements and consistent with proper professional practices and student confidentiality. ITEEA-STEM  $\oplus$ CTL agrees that test scores shall be kept confidential and shall only be used for purposes of monitoring and reporting in aggregate the effectiveness of the course(s). Teachers that violate the confidentiality of the assessment will result in a breach of security and copyright and immediate removal from the Network. Notification of this breach shall be reported to the superintendent and any legal filings that may be instituted.
  - d. Teachers are subject to confidentiality regarding the online assessment. Screen printing or otherwise making paper copies or digital copies of questions is considered a breach of security and subject to copyright violations. Sharing of teacher user id and password to other teachers is considered a breach of confidentiality of student data and copyright protected materials and cause for removal from the Network.

### **Equipment/Hardware/Software Requirements**

The school agrees to provide a laboratory space that is conducive to the delivery of a Technology and Engineering/STEM program. The only requirement is to have sufficient quantities of resources that will ensure students participating in the course have access to equipment and processes necessary to design, construct, and present solutions to the technological and engineering problems they are presented. Students must have access to the following software applications (NOTE: Open Source Software is available that meet these criteria at no cost to the school/district):

1. CAD: Computer-aided-design software (e.g., AutoCAD, Google SketchUp or equivalent with drawing capabilities)
2. Word processing software (e.g., Microsoft Word, OpenOffice)
3. Spreadsheet software (e.g., Microsoft Excel, OpenOffice)
4. Presentation software (e.g., Microsoft PowerPoint, OpenOffice)

The STEM  $\oplus$ CTL has entered into an agreement with the Autodesk, Inc., that will enable all teachers and students to obtain free access to certain Autodesk products. These products may only be installed on the student's and teacher's personal computer. The STEM  $\oplus$ CTL may from time to time have offers to schools regarding free access to Autodesk products for school computers. Contact [bburke@iteea.org](mailto:bburke@iteea.org) for more information.

### **Costs**

A summary of costs are as follows

1. The cost of the Network access is an annual fee provided terms of the Agreement are upheld. Pro-rated fees for a partial year do not apply. This fee is non-refundable. Access to the Network resources are based on payment of this fee. This annual fee may be paid by states for the schools. A list of the states and fees may be found at [www.iteea.org/Ebd/Network](http://www.iteea.org/Ebd/Network)
2. Internet connectivity is required and supplied by the school.
3. Any travel costs or substitute teacher fees are the responsibility of the school/school system.

### **Model Program**

The School agrees that the course(s) as implemented will serve as an ITEEA-Ebd™/STEM  $\oplus$ CTL program model for other school districts. The School will make its program available for observation and visitation by other schools and districts. The school agrees to



Please type all information on this page. (Note, some information is automatically filled when completing page 1)  
Use Additional Teacher Page as Needed

<b>School Contact Information</b>					
<b>School Name:</b>					
<b>Street Address:</b>					
<b>City:</b>		<b>State:</b>		<b>Zip Code:</b>	
<b>Phone:</b>				<b>Fax:</b>	
<b>Principal's Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>
<b>Principal's Email:</b>					
<b>School Website</b>					

<b>Teacher Contact Information</b>					
<b>LEAD Teacher Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>
<b>LEAD Teacher Email:</b>					
<b>LEAD Teacher EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD				
<b>Teacher 2 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>
<b>Teacher 2 Email:</b>					
<b>Teacher 2 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD				

<b>District Contact Information</b>					
<b>School District:</b>					
<b>District Street Address:</b>					
<b>District City:</b>		<b>State:</b>		<b>Zip Code:</b>	
<b>District Phone:</b>				<b>Fax:</b>	
<b>Superintendent's Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>
<b>Superintendent's Email:</b>					
<b>District Website:</b>					
<b>District TE/STEM Supervisor:</b>				<b>Email:</b>	

### **INSTRUCTIONS:**

#### **OBTAIN SIGNATURES on PAGE 3 and SEND Completed Form:**

- Complete all the contact information. Please use the Form-Fill Version so that the information is legible. Forms that are unreadable will be returned.
- Obtain the signatures of the Teacher(s), Principal, TE/STEM Supervisor/Director, and the Superintendent and forward to: **Barry Burke | Director, STEM Center for Teaching and Learning™**  
By **FAX 888-247-2113** OR Email [bburke@iteea.org](mailto:bburke@iteea.org)
- Executed copies will be posted on the EbDPortal™. A welcome letter and instructions on how to login will be sent to the lead teacher of record from this form.



Use this page for Additional Teachers ONLY

<b>School Information</b>				
<b>School Name:</b>				
<b>City:</b>	<b>State:</b>		<b>Zip Code:</b>	
<b>Phone:</b>			<b>Fax:</b>	

<b>Teacher Contact Information</b>						
<b>Teacher 3 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 3 Email:</b>						
<b>Teacher 3 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					
<b>Teacher 4 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 4 Email:</b>						
<b>Teacher 4 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					
<b>Teacher 5 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 5 Email:</b>						
<b>Teacher 5 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					
<b>Teacher 6 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 6 Email:</b>						
<b>Teacher 6 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					
<b>Teacher 7 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 7 Email:</b>						
<b>Teacher 7 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					
<b>Teacher 8 Name:</b>	<b>Pre:</b>		<b>First:</b>		<b>Last:</b>	
<b>Teacher 8 Email:</b>						
<b>Teacher 8 EbD™ Courses:</b>	Elementary : <input type="checkbox"/> GrK <input type="checkbox"/> Gr1 <input type="checkbox"/> Gr2 <input type="checkbox"/> Gr3 <input type="checkbox"/> Gr4 <input type="checkbox"/> Gr5 Middle School: <input type="checkbox"/> ET <input type="checkbox"/> I&I <input type="checkbox"/> TS High School: <input type="checkbox"/> FoT <input type="checkbox"/> TD <input type="checkbox"/> T&S <input type="checkbox"/> ADA <input type="checkbox"/> ATA <input type="checkbox"/> EngD					