

# For: Technical Drawing/Design Level 1, 2, 3, & 4 students

From: Mr. Kutz – Westlake High School Engineering & Technology Education Dept.

*"Home of the innovative and award-winning TechMates"*

Dear Parents,

After reading the “It’s a Flat World” book by Thomas Friedman, one could surmise that we as teachers and parents need to ensure that our students are well equipped for the many technological changes in their future. They already have (or will have) a significant advantage and have accrued multiple capabilities by virtue of taking the Technical Drawing/Design class, and we need to encourage them to continue to pursue this edge. No matter what they decide to pursue for a profession, the success of their careers and livelihoods will depend on their technological literacy (by the way, there are seven technological systems). Across the globe, the level of technology and innovation will continue to increase and become more sophisticated, emphasizing the increasingly important role it will play in their lives. One of the ways your son/daughter can continue staying sharp, developing potential and pursuing their edge is by engaging in a summer “engineering/tech” type of activity. Please peruse (below) the many activities your son/daughter can engage in. Many of them are engineering/innovation related. As William A. Wulf, President of the National Academy of Engineering has stated, “engineering is great preparation for many careers. Consider that 22% of Fortune 200 CEO’s have a BS in engineering. In fact, engineering is the most common undergraduate degree among the fortune 200 CEO’s”. We all want the best for our children – please encourage your son/daughter to help them achieve their technological/innovative potential. Best wishes for a great and productive summer! Let me know if you have any questions – thank you for your continued support!

Scott Kutz

Westlake High School

Engineering & Technology Education Department, The “*Original*” STEM subject

STEM, Pre-Architecture, Pre-Engineering, & Pre-Design Studies

*“Teaching the new age of INNOVATION”*

[kutz@wlake.org](mailto:kutz@wlake.org)

440-899-3075 x2041



## **SUMMERTIME TECH**

**SUMMER TECHNOLOGY PROGRAMS:** Many colleges offer summer programs in architecture, engineering, and design that can be taken for enrichment. There are numerous benefits for attending, including gaining knowledge, educational growth, meeting new people and experiencing a college environment. In addition, such experiences look impressive on a college application .....”*Knowledge is power – reach beyond your grasp!*”

**Alfred University** – summer programs for astronomy, business, creative writing, science & **ENGINEERING**. For additional information please go to [www.alfred.edu/summer](http://www.alfred.edu/summer).

**Bridgewater College** – High School Leadership Academy. Last week in July – first week in August. Workshops and activities focused on team building, communication skills, ethical empowerment and **CREATIVE PROBLEM SOLVING**. Visit their web site at [www.bridgewater.edu](http://www.bridgewater.edu). Contact Carrie Wallace at 540-828-5680.

**Carnegie Mellon** –

1. Summer Program for Diversity – For students entering their junior or senior year in high school. Includes Summer Academy for Math & Science, AP/Early Action, Pre-College Fine Arts including **ARCHITECTURE**, Art, **DESIGN**, Drama and Music, Game Academy. Information available in Guidance or on their web site at [www.cmu.edu/enrollment/summerprogramsfordiversity](http://www.cmu.edu/enrollment/summerprogramsfordiversity).
2. Summer Pre-College Programs in AP/Early Action, Pre-College Fine Arts including **ARCHITECTURE**, Art, **DESIGN**, Drama and Music, Game Academy. Information available in Guidance or on their web site at [www.cmu.edu/enrollment/pre-college](http://www.cmu.edu/enrollment/pre-college).

**Case Western Reserve University (and Ohio State University)** – ID Tech Camp is a unique computer camp offering courses that vary from creating video games and producing digital movies to designing web pages and learning programming and robotics.

<http://www.internaldrive.com/locations/oh-summer-camps-ohio-computer-camps/>

**Columbia University** – Summer High School Programs, Pre-college courses for grades 9-12. Study in NYC: science, law, business, **ENGINEERING**, politics, college prep, liberal arts. Study in Barcelona: history, language, culture. Information available in guidance or online at [www.ce.columbia.edu/highschool](http://www.ce.columbia.edu/highschool)

**Engineering Camps across the country:** <http://www.asme.org/Communities/Students/K12/Camps.cfm>

**Harvard Summer School** – Summer program for HS students- financial aid available. Information can be found in the Guidance Office or on their web site at [www.ssp.harvard.edu](http://www.ssp.harvard.edu). Deadline: April 16.

**Miami University (OH.)** – Junior Scholars Program. Includes courses such as **ARCHITECTURE**. For information contact Dr. Robert S. Smith at [www.Junior\\_scholars@muohio.edu](mailto:www.Junior_scholars@muohio.edu) Deadline: May. <http://www.units.muohio.edu/jrscholars/>

**Ohio State University** – **ENGINEERING** Summer Academy. Website: <http://feh.osu.edu/SHI/>

**Otis College of Art and Design (CA)** – Includes **ARCHITECTURE** & **TOY DESIGN**; Visit their web site at [www.otis.edu](http://www.otis.edu).

**Penn State University** – Women in the Sciences and **ENGINEERING** WISE Camp from June 26 to July 1. This is a one-week residential career awareness program for young women entering the 11<sup>th</sup> or 12<sup>th</sup> grade. Application available in Guidance or call Katie Rung at 814-865-3342. Preferred deadline is March 16, regular deadline is April 2.

**Pratt University** – pre-college programs for **ARCHITECTURE**, creative writing, fashion design, drawing and painting, **GRAPHIC DESIGN**, **ILLUSTRATION**, **INTERIOR DESIGN**, photography and sculpture. July 6 – July 31 and open to grades 10-12. Additional info. Available at <http://www.pratt.edu/ccps-precollege#> or call 718-636-3453.

**Purdue University** - Summer **ENGINEERING** program for girls (EDGE), June 22–26. The application is available in the Guidance office. For more information visit their web site: <https://engineering.purdue.edu/WIEP> Deadline: 4/20.

**Smith College** – Summer Science and **ENGINEERING** Program for High School Girls, June 28 - July 25. Visit their web site at [www.smith.edu/summerprograms/ssep](http://www.smith.edu/summerprograms/ssep).

**Summer Discovery** – Pre-college enrichment for high school students. Website: [www.summerfun.com](http://www.summerfun.com)

**Summer Institute for the Gifted (SIG)** – Residential Program for grades 4-11 at various participating universities. Brochures available in the guidance office. Visit their web site at [www.giftedstudy.com](http://www.giftedstudy.com).

**Texas Tech University – ENGINEERING** Camp for middle school and high school students. One week. Lubbock, Texas. Price – FREE. Visit their web site at <http://www.tstem.ttu.edu/engineeringcamp/>

**United States Military Academy** – Summer Leaders Seminar, May 30-June 5 or June 6-12. Cost is \$325. Application available at <http://admissions.usma.edu/moreinfo/summer.cfm>

**University of Akron** – Oelschlager Summer Leadership Institute for students who will be a high school senior and have a 3.0 GPA on a 4.0 scale. Website: <http://www.uakron.edu/studentaff/oelschlager/index.php>

**University of Dayton** – Women in **ENGINEERING** Summer Camp, July 12-17. For information visit their web site at <http://engineering.udayton.edu/wie>. Cost is \$400. Deadline: June 3.

**University of Toronto** - Summer Academy, **ENGINEERING** enrichment program. Visit their web site for information at <http://www.ecf.utoronto.ca/apsc/html/deep/>

**Washington University in St. Louis – ARCHITECTURE** Discovery Program. Visit their web site for information at [www.arch.wustl.edu](http://www.arch.wustl.edu) Summer Scholars Program for high school students. For information call 314-935-6200.

**Worcester Polytechnic Institute** – Frontiers, a two-week summer residential program for soon to be juniors and seniors interested in science, math and **ENGINEERING**. Gems, a one-week residential program for soon to be sophomore, junior and senior girls interested in math, science and engineering. Information available in guidance or visit their web site for information at [www.wpi.edu/+frontiers](http://www.wpi.edu/+frontiers)

**Wright State** – Summer Institutes and Camps for grades 6-12 and Summer Honors Institute for gifted students entering grades 10 and 11; includes the new **S.T.E.M.** Institute! Visit their web site at [www.wright.edu/academics/precollege](http://www.wright.edu/academics/precollege).

## More reasons to attend a summer tech program:

- To explore the possibility of studying architecture, design, engineering, innovation/creativity, and to help determine that this is the area you would like to study in college.
- To discover and develop your skills and capabilities through college-level coursework, using a variety of tools, materials, techniques, and experiences.
- To develop a body of work for your portfolio for admission to college.
- To meet other students who share your interests and to sample the college experience.

***Here's a list of required/recommended summer reading and activities for students in the Advanced Technical Drawing/Design classes (students will share their work w/the class on the 1st day back):***

**Level 2** students are to read from one of the choices in number one, then read one of the books from number 2, 5, 6, or 7, and complete at least one item (lettered) from **each** of the four main categories (listed below).

*Required:*

1. Read an article in "Architectural Digest", or "House Beautiful", or "Florida Design".

*Required* – Choose one from:

2. Read the book "It's a Flat World" by Thomas Friedman

5. Read the book "The Five Regions of the Future" by Joel Barker and Thomas Erikson.

6. Read the book "Form, Space, Order" by Ching.

7. Read: "Hot, Flat, & Crowded" by Friedman; "Eco Architecture" by Fisanick; "Green Architecture" by Taschen

READ/RESEARCH: B, E  
DRAW/DESIGN/CREATE: H, J, K, L  
BUILD/CONSTRUCT: G  
EXPLORE/ENGAGE: D, O, Q, S

**Level 3** students are to read from one of the choices in number one, then read two of the books from number 2, 5, 6, or 7, and complete at least one item (lettered) from **each** of the four main categories (listed below).

*Required:*

1. Read an article in "Architectural Digest", or "House Beautiful", or "Florida Design".

*Required – Choose 2 from:*

2. Read the book "It's a Flat World" by Thomas Friedman

5. Read the book "The Five Regions of the Future" by Joel Barker and Thomas Erikson.

6. Read the book "Form, Space, Order" by Ching.

7. Read: "Hot, Flat, & Crowded" by Friedman; "Eco Architecture" by Fisanick; "Green Architecture" by Taschen

READ/RESEARCH: A, B, E  
DRAW/DESIGN/CREATE: F, I, K, L  
BUILD/CONSTRUCT: M, N, P  
EXPLORE/ENGAGE: D, O, Q, S

**Level 4** students are to read from one of the choices in number one, then read one of the books from number 3 or 4, then read one of the books from number 2, 5, 6, or 7, and complete at least one item (lettered) from **each** of the four main categories (listed below).

*Required:*

1. Read an article in "Architectural Digest", or "House Beautiful", or "Florida Design".

*Required – Choose one from:*

3. Read the book "And Suddenly the Inventor Appeared: TRIZ, the Theory of Inventive Problem Solving" by Genrich Altshuller.

4. Read the book "40 Principles: TRIZ Keys to Technical Innovation" by Genrich Altshuller.

*Required – Choose one from:*

2. Read the book "It's a Flat World" by Thomas Friedman

5. Read the book "The Five Regions of the Future" by Joel Barker and Thomas Erikson.

6. Read the book "Form, Space, Order" by Ching.

7. Read: "Hot, Flat, & Crowded" by Friedman; "Eco Architecture" by Fisanick; "Green Architecture" by Taschen

READ/RESEARCH: A, B, E  
DRAW/DESIGN/CREATE: F, I, K, L  
BUILD/CONSTRUCT: M, N, P  
EXPLORE/ENGAGE: O, Q, R, S

***Here's a list of the activities that can help you become more productive, capable, creative, intellectual, and will give you a great start for the next school year in your Technical Drawing/Design class.***

***.....(Compliments of the WHS Engineering & TechEd brainstorm department).....***

- A. Go to the library/bookstore and read the book "Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future" (2007) by the Committee on Science, Engineering, and Public Policy (COSEPUP)
- B. Go to the library/bookstore and read the autobiography of Richard Feynman – at a young age, he went into the electrical equipment repair business starting off by repairing radios.
- C. Go to Pat Catan's (or Barnes & Noble) to buy and read the latest issue of "Airbrush Action" magazine.
- D. Visit Model homes of new developments to get ideas for next year's Model Home Design Contest.
- E. Watch HGTV-type shows such as "Green Home '09", "Design Star", "Before & After", & "Divine Design".

- F. Head outdoors and sketch a 2 pt. perspective of your house or car, with detail.
- G. Construct a 3 dimensional shape/object/model of something you've seen in a book (e.g., a building, structure, shape, tower design, etc.) out of clay, cardboard, graham crackers, or mat board.
- H. Using just a compass, create several detailed geometric designs/configurations on paper.
- I. Brainstorm, invent, and sketch out new ideas and useful or practical products.
- J. Whatever room you are in, pick out an object and sketch it out in 3D (isometric) and/or from different views (orthographic: top, front, and right side).
- K. Download SketchUp (free version from Google) and learn how to create architectural, mechanical, and other everyday objects you might see in the kitchen, garage, or around the house.
- L. Download AutoCAD, Inventor, and/or Revit (free version from AutoDesk) and work through the tutorials to learn how to create architectural, engineering, mechanical, and industrial design type objects.
- M. Click on [www.instructables.com](http://www.instructables.com) and try to build one of the hybrid/combination bikes. After building one on your own, try to redesign it and build your own creation.
- N. Click on [www.makezine.com](http://www.makezine.com) and explore all the different ways to make interesting items. Try to build one or more of the projects listed and improve on the design.
- O. Click on [www.pbs.org/designsquad](http://www.pbs.org/designsquad) and check out the website for episodes, games, and activities
- P. Click on [www.aasbd.com](http://www.aasbd.com) and build/race a soapbox derby car (or facsimile).
- Q. Attend a summer tech and/or pre-college program (in engineering, architecture, design, CAD).
- R. Talk to a local architect/engineer/contractor/computer firm to obtain a summer internship with them.
- S. Visit 2 or 3 college campuses to obtain information and a sense of perspective about the school.

.....*Have a pleasant and productive Summer!*.....

### **CLASS SUPPLY LIST REQUIREMENTS – TECHNICAL DRAWING/DESIGN & D-MAX**

1. At least 2 No. 2 pencils. Everyday. Pens are prohibited.
2. College-lined looseleaf notebook paper (ripped, spiral-bound paper will NOT be accepted!)
3. **New** 1.5" binder (No retreads, trapper keepers, multi-use, or soft bound). Binders with the plastic windows to insert a cover design are preferred – required for level one students only.
4. Masking tape (.75" wide), metric (mm) rule, red/blue pencil.
5. Utility knife AND an "X-Acto" (hobby) knife (#11 size) – required for level 2, 3, & 4 students only.
6. Jump Drive – 1GB or higher.

### **CLASS SUPPLY LIST REQUIREMENTS – AIRBRUSH ILLUSTRATION**

1. At least 2 No. 2 pencils. Everyday. Pens are prohibited.
2. College-lined looseleaf notebook paper (ripped, spiral-bound paper will NOT be accepted!)
3. **New** 1.5" binder (No retreads, trapper keepers, multi-use, or soft bound). Binders with the plastic windows to insert a cover design are preferred – required for level one students only.
4. Masking tape (.75" wide)
5. Combination lock to lock up materials in **143**. Do NOT bring valuables, wallets, purses, jewelry to class and/or keep in class locker. The school nor the Engineering & Technology Education Dept. assumes any/no responsibility if it is stolen while in class. Keep it home!
6. #11 "X-Acto" (w/safety cap), masking tape, frisket film (Pat Catan's), new bottle of windex (glass cleaner) and a new box of "Drug Mart" brand Q-tips, new white T-shirt; *optional* - dust mask, shop apron (old shirt), plastic tool box (i.e., fishing tackle box).  
Note: You will be assessed a \$1.00 clean-up charge if your airbrush or workstation is not cleaned at the end of the period.  
Note: Extra credit project costs (each) - .25 for 8.5" x 11" vellum; .50 for paint
7. You need to have **ALL** supplies before you begin on your projects (end of the first week)!
8. Summer reading assignment – read "Airbrush Action" magazine from Pat Catan's/ Barnes & Noble.