

FOUNDED 1862

2019 SUMMER 2020 OPPORTUNITIES

PART I

2019 Illinois Engineering Summer Camps

**Danville School District No. 118 is excited to offer
University of Illinois Summer Camps
to our Danville High School
INCOMING SOPHOMORES, JUNIORS, AND SENIORS**



**ALL APPLICATIONS ARE DUE
TO THE EDUCATIONAL SUPPORT OFFICE
BY WEDNESDAY, MARCH 6, 2019!**

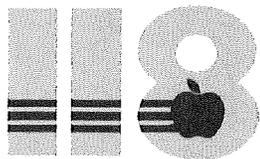
Kelly Truex (217)444-1062 or Brandie Kuchefski (217)444-1065

If accepted, students will need:

- ① parent recommendation letter
- ② teacher recommendation letter

All camps are week long, residential experiences paid for by Danville District 118 Title I funds.

Transportation will be provided.



FOUNDED 1862

Dr. Alicia Geddis
Superintendent

Mr. John Paul Hart
Assistant Superintendent

Dr. Elizabeth Yacobi
Assistant Superintendent

Hello, Danville High School Families!

It is time to begin scheduling opportunities for our students to participate in another exciting summer program. We are beginning with camps offered through a partnership with the University of Illinois. Danville High School sophomore, junior, and senior students may apply to attend week long residential camps to explore the world of engineering. In order to best communicate these opportunities, our DHS students in Mrs. Howard's class have created this *2019 Illinois Engineering Summer Programs booklet*.

Although the University extends many of these opportunities to students in grades nine through twelve, this **free** Danville District 118 pilot is open **only to incoming sophomores, juniors, and seniors**. If accepted, students will need a teacher and parent recommendation. Enclosed is an application to start the process. Please note in the application that Danville District 118 is listed as a second parent as we need to coordinate communication between the University and our students. Applications are due to the Educational Support Office by **March 6, 2019**. We realize this is a very short timeline. It took us a minute to organize the program with the University and this is too exciting to miss! If help is needed, our DHS Guidance counselors will be available to help with the application process. Danville District 118 will conduct an initial review and approval of all applications. We will then submit them to the University of Illinois personnel for final approval. Please understand, not all applications will be accepted, so submit your student's application now.

We expect to provide more exciting opportunities for additional University of Illinois summer camps **and** the District 118 summer programming camps similar to last year. Please look forward to this exciting news in the near future! Sign up now!

Sincerely,



Dr. Alicia Geddis, Superintendent

Danville Community Consolidated School District No. 118

2019 EXPLORING THE INTERSECTION OF CREATIVITY AND ENGINEERING CAMP (ALL-GENDER) SESSION 1: SUN, 6/9/2019 - SAT, 6/15/2019
SESSION 2: SUN, 7/14/2019 - SAT, 7/20/2019

11TH-12TH GRADE

This camp will explore design, creativity, and innovation in engineering through hands-on projects and team activities. These projects will engage the campers in brainstorming, ideation, synthesis, and prototyping.

Campers will:

- use design thinking as an approach to creative problem solving
- practice empathic modeling skills to become engineers with a better understanding of user needs
- apply human-centered design to engineering
- work collaboratively in multidisciplinary teams

2019 ELECTRICAL ENGINEERING CAMP (WOMEN-FOCUSED) SUN, 6/16/2019 - SAT, 6/22/2019

10TH-12TH GRADE

Formerly known as Girls' Adventures in Math, Engineering, and Science (GAMES) Summer Camps

The Girls Learning Electrical Engineering (GLEE) camp for high school women explores the depth and breadth of Electrical and Computer Engineering. Campers learn how research in this discipline benefits society as a whole. The technical program includes classroom instruction, demonstrations, hands-on activities, tours, usage of research facilities, and four team projects. The curriculum showcases practical applications of ECE (circuits, signals, electromagnetics, power, nanotechnology, solid state electronics, and photonics) by investigating a real-world technology – the cell phone. Projects include:

- Building an FM transmitter by laying out the parts of their circuit on a protoboard, determining their purpose, and then soldering together an FM phone that they take home with them.
- Using an online circuit simulator to learn about logic gates before building an LED calculator circuit that adds numbers as high as 3 plus 3 and displays the result with light.
- Working in a university cleanroom laboratory to make a solar cell and phototransistor
- Building an image projector out of folded paper that holds an LED flashlight, a 1" square transparency, and a lens

2019 EXPLORING YOUR OPTIONS CAMP (ALL-GENDER) 1: SUN, 6/16/2019 - SAT, 6/22/2019
SESSION 2: SUN, 6/23/2019 - SAT, 6/29/2019

11TH-12TH GRADE

Exploring Your Options (EYO) is a week-long, residential program that introduces rising juniors and seniors to the varied disciplines of engineering. EYO takes place at the University of Illinois in Urbana-Champaign, providing campers with the opportunity to interact with engineering students and faculty during the lessons and hands-on activities developed by the departments in the College of Engineering.

Get a taste of each of the following engineering fields:

- Aerospace Engineering
- Agricultural Engineering
- Bioengineering
- Chemical Engineering
- Civil Engineering
- Computer Science
- Electrical & Computer Engineering
- Industrial Systems Engineering
- Material Science and Engineering
- Mechanical Science and Engineering
- Nuclear, Plasma, and Radiological Engineering

9TH-11TH GRADE

Formerly known as Girls' Adventures in Math, Engineering, and Science (GAMES) Summer Camps

Bioengineers study and understand how complex biological systems work and how to design and construct medical devices, better therapeutics, and solutions to large health and wellness problems facing society today. This camp focuses on the technical while also considering the societal impacts on current issues of healthcare, health disparities, and sustainability.

We have many exciting activities planned to engage young women in the field of Bioengineering:

- Learn from short lectures on the human body, health, and the field of Bioengineering provided by faculty and researchers in the field.
- Engage in labs covering genetics, cell culture, tissue engineering, biomaterials, biomechanics, bioinstrumentation, biological machines, and more.
- Apply new concepts through hands-on lab activities relating to current state-of-the-art techniques within amazing research facilities.
- Bond with campers and staff through fun and engaging activities.
- Visit the Jump Simulation and Education center to learn how engineers and doctors work together to solve many of today's biggest health issues.

The capstone camp project puts your engineering skills to the test as you design a medical device, inspired by the activities during the week of camp.

2019 EXPLORING NUCLEAR, PLASMA, & RADIOLOGICAL ENGINEERING CAMP (ALL-GENDER)

SUN, 6/23/2019 - SAT, 6/29/2019

11TH-12TH GRADE

Campers will explore nuclear, plasma and radiological engineering disciplines through many hands-on projects and demonstrations. Through individual and team activities, participants will investigate the disciplines of nuclear energy, plasma and fusion technologies, and radiological science. They will consider questions like:

- How does a nuclear reactor work, and how does it impact the nation's energy production?
- What are the issues regarding nuclear reactor safety?
- What is radiation and how is it controlled?
- What is plasma and what are its uses?
- How do plasmas contribute to the field of medicine?
- How does a radiation detector work?
- What are some of the beneficial uses of radiation?

These questions are answered through lectures, hands-on activities, and team projects. Campers will see nuclear, plasma, and radiological engineering in practice through laboratory demonstrations and field trips such as:

- Measuring radiation using Geiger counters and other devices
- Seeing a mousetrap reactor simulate a nuclear reaction
- Experiencing radiation through a cloud chamber demonstration
- Touring a virtual nuclear reactor
- Using virtual and lab simulations to learn about radiation dosages, half-life, and shielding
- Observing confined plasma and interacting with a plasma ball
- Crushing cans to understand magnetic pressure in plasmas
- Touring HIDRA, NPRE's unique plasma/fusion facility (Shown immediately to the right).
- Touring a plasma nanotechnology facility and labs that make the machines that make semi-conductor chips
- Touring the radiological Instrumentation Laboratory
- Touring the soft robotics lab

9TH-12TH GRADE

Formerly known as Girls' Adventures in Math, Engineering, and Science (GAMES) Summer Camps

From tiny airplanes delivering packages to sending humans to Mars, today is an exciting time for everything related to Aerospace Engineering! This camp provides young women with the opportunity to explore aerospace engineering through numerous hands-on projects and demonstrations.

Utilizing individual and team activities, participants will investigate various aspects of this discipline comprising flight mechanics, aerodynamics, aerospace structures, orbital mechanics, and propulsion systems to then apply them to aircraft and spacecraft design. These topics will help the students answer questions such as:

- What keeps airplanes in the air during a flight?
- How are composite materials used to improve aircraft efficiency?
- What is needed to launch people and satellites into space?
- How do satellites stay in orbit around the Earth?

Camp activities include:

- Design, construction, and launch of model boost gliders and rockets.
- Classes and laboratory sessions led by graduate students and faculty working on cutting-edge research projects.
- Guest speakers from the Aerospace industry. Past guest speakers were representatives of NASA, Northrop-Grumman, Orbital ATK, and JPL.
- Field trip to the local airport where participants have the opportunity to take an actual flight in a small aircraft operated by the Institute of Aviation.

**2019 EXPLORING MECHANICAL SCIENCE &
ENGINEERING CAMP (ALL-GENDER)****SUN, 7/7/2019 - SAT, 7/13/2019*****11TH-12TH GRADE***

Mechanical Engineering is all about building things! Mechanical engineers understand how machines work and how to design and construct new ones to solve challenging problems in the world. This camp will explore many of the exciting new topics in mechanical engineering, such as:

- constructing 3D printers to make things
- building robots to explore and clean up hazardous waste
- creating prosthetics to help injured people walk again
- making water treatment systems that run on sunlight for the developing world

Campers will get hands-on experience building and designing machines that make the world a better place, using all their creativity and problem-solving skills. The camp will also include field trips to on-site labs and nearby research and manufacturing companies.

10TH-12TH GRADE

Formerly known as Girls' Adventures in Math, Engineering, and Science (GAMES) Summer Camps

Everything is made of materials. From buildings to batteries, clothing to cars, we depend on materials for many things in our everyday life. Materials science and engineering (MatSE) is all about understanding the structure and properties of materials ranging from the atomic scale to the macro-scale. Then we learn how to process them to get desired performance in new and existing technologies. Advancements in our understanding of materials will enable next generation technologies for power generation and storage, transportation, sustainable packaging of foods and consumer goods, biomedical applications, and many, many others!

Materials science and engineering is a highly collaborative, interdisciplinary field. If you like math, physics, chemistry and engineering but can't choose between them—MatSE is the perfect place for you explore all of these fields under one umbrella. Campers will explore this diversity through hands-on activities including guided lab activities aimed at introducing key concepts in MatSE and the opportunity to design a prototype based on materials properties that your team discovers. Camp topics might include:

- The Materials Science of Chocolate and Superheros,
- Advanced manufacturing methods ranging from composite fabrication to casting to 3D printing of structural and functional materials,
- Biomaterials including prosthetics, bone scaffolding and cell mechanics,
- Crystallography via state-of-the-art characterization tools and modeling methods, and
- Materials for sustainable energy solutions including material life cycles, batteries and photovoltaics
- Improvement of basic technology and communication skills
- Opportunities to develop new friends and improve social skills

Profile of Participants

- From traditionally under-served ethnic minority groups, economically disadvantaged backgrounds, and/or urban areas
- Sophomores or juniors standing at the time of the application
- Ranked in the top 20%; and have a B average in English, Math and Natural Sciences
- Display curiosity, cooperation, work ethic in their references
- Display an interest in learning more about STEM areas on the essay

9TH-12TH GRADE

Chemical engineering combines science and mathematics to produce useful materials. In most cases, a chemical engineer takes a scientific process or discovery and engineers it so that it can be made on a large scale. By making food, clothes, power, medicines, and plastic on a large scale, they are then more affordable for all of us!

Through lectures, hands-on activities, and team projects, campers experience activities such as:

- Working directly with engineering equipment such as distillation towers in a chemical plant or an extruder machine to make plastics
- Extracting DNA from fruits and vegetables and understanding how plants make food
- Using Silly Putty to understand the physics of fluids, computer games to understand protein folding, or chocolate to understand crystal formations
- Attending field trips to witness how chemical engineering topics apply to the real world and to talk with female engineers about what it's like to work in these locations

Past field trips have included:

- Lyondell Bissell Plant in Tuscola, IL
- Abbott Power Plant in Champaign, IL

2019 MECHANICAL SCIENCE & ENGINEERING CAMP (WOMEN-FOCUSED)

SUN, 7/14/2019 - SAT, 7/20/2019

9TH-12TH GRADE

Mechanical Engineering is all about building things! Mechanical engineers understand how machines work and how to design and construct new ones to solve challenging problems in the world. This camp will explore many of the exciting new topics in mechanical engineering, such as:

- constructing 3D printers to make things
- building robots to explore and clean up hazardous waste
- creating prosthetics to help injured people walk again
- making water treatment systems that run on sunlight for the developing world

Campers will get hands-on experience building and designing machines that make the world a better place, using all their creativity and problem-solving skills. The camp will also include field trips to on-site labs and nearby research and manufacturing companies.

2019 ENVIRONMENTAL ENGINEERING AND SUSTAINABILITY CAMP (WOMEN-FOCUSED)

SUN, 7/21/2019 - SAT, 7/27/2019

10TH-12TH GRADE

The Environmental Engineering and Sustainability camp focuses on designing sustainable technological solutions for critical environmental and energy challenges of the 21st Century. Through a series of team activities, lab exercises, and field trips, campers have the opportunity to learn about research and careers in civil and environmental engineering. Topics might include:

- Sustainability and how the environment, culture, society, and economics are all linked
- Environmental pollutants and the biogeochemical cycles they follow as they move through the air, water and soil
- Climate change
- Renewable energy sources and energy efficiency
- Water resources and clean water technologies
- Water-Energy-Food nexus
- Air quality monitoring from ground and satellites

2019 DISCOVER BIOENGINEERING CAMP (ALL-GENDER)

SUN, 7/21/2019 - SAT, 7/27/2019

9TH-10TH GRADE

Discover Bioengineering is a week-long residential camp that introduces rising freshman and sophomores to the field of Bioengineering. Bioengineering includes modeling of systems, designing new technologies and devices, and improving healthcare. Bioengineers study and understand how complex biological systems work, design and construct medical devices and therapeutics, and solve healthcare problems facing society. Here are some of the exciting topics campers will discover:

- Cell and Tissue Engineering
- Biomechanics and Prosthetics
- Imaging and Sensing
- Therapeutics Engineering
- Computational and Systems Biology

These topics were covered through lectures, hands-on activities and team projects. Some hands-on activities and projects that campers were involved in included:

- Cell culture of mammalian cells
- Motion capture biomechanics
- Analysis of biomimetic materials
- Creating genetic models
- Building biomedical instrumentation

9TH-10TH GRADE

Discover Engineering (DE) is a week-long, residential camp for rising freshmen and sophomores with a strong interest in math and science. Campers work on several projects that incorporate different aspects of engineering. Campers will visit various research labs around campus, become familiar with the different forms of engineering disciplines studied at Illinois, and interact directly with faculty and students actively researching in these areas. This is a great way to gain a better understanding of engineering in general, as well as an increased understanding of the wide range of careers and areas of study available for engineers.

Learn about and experience:

- Aerospace Engineering
- Agricultural Engineering
- Bioengineering
- Chemical Engineering
- Civil & Environmental Engineering
- Computer Science
- Electrical & Computer Engineering
- Industrial Systems Engineering
- Material Science and Engineering
- Mechanical Science and Engineering
- Nuclear, Plasma, and Radiological Engineering

Danville District 118 2019 Summer Opportunity

University of Illinois Summer Camps

Parent Recommendation

Parent Name: _____

Address: _____

Phone: _____

I, _____, parent of _____
recommend my student for the District 118 2019 Illinois Engineering
Summer Camp Program at the University of Illinois. I recognize this is a
week long residential (overnight) program. I believe _____
is a responsible student and can be counted upon to represent District
118 in a positive manner.

Parent Signature _____ Date: _____

General Application

What program are you applying for?

Please indicate your **first and second** choice below with **1** being *most* preferred and **2** being *equally or just slightly less* preferred. If space is unavailable in your first choice, we will place you in your second choice. Do not choose a 2nd choice if there are no other programs that interest you.

Track	Session Dates	1	2
Exploring the Intersection of Creativity and Engineering Session I <i>11th-12th Grade</i>	June 9-15, 2019	<input type="radio"/>	<input type="radio"/>
Electrical Engineering <i>Women, 10th-12th Grade</i>	June 16-22, 2019	<input type="radio"/>	<input type="radio"/>
Exploring Your Options Session I <i>11th-12th Grade</i>	June 16-22, 2019	<input type="radio"/>	<input type="radio"/>
Bioengineering <i>Women, 9th-11th Grade</i>	June 23-29, 2019	<input type="radio"/>	<input type="radio"/>
Exploring Your Options Session II <i>11th-12th Grade</i>	June 23-29, 2019	<input type="radio"/>	<input type="radio"/>
Exploring Nuclear, Plasma, and Radiological Engineering <i>11th-12th Grade</i>	June 23-29, 2019	<input type="radio"/>	<input type="radio"/>
Aerospace Engineering <i>Women, 9th-12th Grade</i>	July 7-13, 2019	<input type="radio"/>	<input type="radio"/>
Materials Engineering <i>Women, 10th-12th Grade</i>	July 7-13, 2019	<input type="radio"/>	<input type="radio"/>
Robotics <i>Women, 9th-10th Grade</i>	July 7-13, 2019	<input type="radio"/>	<input type="radio"/>
Exploring Mechanical Science and Engineering <i>11th-12th Grade</i>	July 7-13, 2019	<input type="radio"/>	<input type="radio"/>
Chemical Engineering <i>Women, 9th-12th Grade</i>	July 14-20, 2019	<input type="radio"/>	<input type="radio"/>
Mechanical Science and Engineering <i>Women, 9th-12th Grade</i>	July 14-20, 2019	<input type="radio"/>	<input type="radio"/>
Exploring the Intersection of Creativity and Engineering Session II <i>11th-12th Grade</i>	July 14-20, 2019	<input type="radio"/>	<input type="radio"/>
Environmental Engineering and Sustainability <i>Women, 10th-12th Grade</i>	July 21-27, 2019	<input type="radio"/>	<input type="radio"/>
Discover Bioengineering <i>9th-10th Grade</i>	July 21-27, 2019	<input type="radio"/>	<input type="radio"/>
Discover Engineering <i>9th-10th Grade</i>	July 21-27, 2019	<input type="radio"/>	<input type="radio"/>

Applicant's Personal Information

First Name*

Middle Name

Last Name*

Preferred first name or nickname*

This will be the name on the applicant's name tag

Date of Birth*

Race

- American Indian or Alaska Native
- Asian
- Black or African decent
- Native Hawaiian or Other Pacific Islander
- White
- None of the above
- Prefer not to say

Race other than those listed

If you responded "None of the above," please list your race here.

Ethnicity*

Gender*

Street Address*

City*

State/Province*

Zip Code*

Country*

Applicant's Primary Phone*

Primary Phone Type*

Applicant's Email Address*

School currently attending*

What grade will you enter in the Fall 2019 school year*

Are you a returning participant?*

If so, what year did you most recently attend?

And what program did you attend?

Parent/Guardian (#1) Information

First Name*

Last Name*

Relationship to applicant*

Primary Phone*

Primary Phone Type*

Secondary Phone

Secondary Phone Type

Email Address*

Parent/Guardian (#2) Information

First Name

Danville Dist. 118

Last Name

Relationship to applicant

School District

Primary Phone

217-444-1062

Primary Phone Type

▼

Secondary Phone

217-444-1068

Secondary Phone Type

▼

Email Address

truex k@danville118.org

Teacher information for Teacher Recommendation Form

The following information will be used to contact the teacher, tutor, or counselor who will be completing your Recommendation Form. We highly recommend that this person be someone who can attest to your skills in math or science. Be sure to notify this person that they should expect an email from wyse@illinois.edu (<mailto:wyse@illinois.edu>) for this purpose.

What is the name of the person we should contact to complete your recommendation form?*

What is their phone number?

What is their email address?*

Enter a single, valid email address only

What is their relationship to the student?

e.g. algebra instructor, mentor

Coursework in Math and Science

Provide a list of coursework in math, science, technology, and engineering. Include grades - official transcripts are not required (example below)

Science:	Biology: A
	AP Chemistry: B
Engineering:	Intro to Engineering: B
Math:	Algebra: B
	Geometry: A

List of relevant coursework*

High School GPA and scale*

e.g. 4.2 on 5.0 scale

Check any of the following that are provided by your school:

- AP science or math course(s)
- IB science or math course(s)
- Engineering course(s)
- Computer science course(s)
- Honors course(s)

Statement of purpose essay

Statement of purpose essay*

Please write in the space below or copy/paste from your word processor an essay describing the impact that you hope this program (and the continued pursuit of an education in math, engineering and science) will have on your future. Describe why you want to attend. Please limit your essay to 500 words.

Max. 500 words

One last thing...

How did you hear about these programs? Check all that apply:

- School announcement)
- Teacher)
- Counselor)
- Community program leader)
- Former program participant)
- Web search)
- Social media)

If you heard of these programs in some other way, please tell us how.

Please remove your completed application from the booklet and return to the Danville High School office for submission to the Educational Support Program Office no later than **Wednesday, March 6, 2019.**