SUMMER CAMPS AT LTU
For High School Sophomores, Juniors, and Seniors
Summer 2021

Lawrence Technological University
/ Marburger STEM Center

Don't miss out! Camps fill up quickly.
LTU's Marburger STEM Center offers stimulating academic camps for students interested in engineering, technology, design, and science.

Expert professors will introduce you to the latest innovations in modern labs and studios on Lawrence Tech’s Southfield campus.

Day or Residential Camp Options
You can commute or opt for a residential camp. As a residential camper, you’ll live in student housing, eat in the cafeteria, and participate in fun activities each evening.

Savings
You can save $100 by attending two, and $200 by attending three, camps.
Save an additional $100 per camp by registering before February 1, 2021.
Come to a Blue and White Day, scheduled throughout the year, and save another $50 per camp (www.ltu.edu/blueandwhitedays).

Scholarships
The top students in each camp will be eligible for scholarships to Lawrence Tech.

Register by June 1, 2021
Additional information and all registration forms are at www.ltu.edu/summercamps. Camps, dates, and times may change. Visit www.ltu.edu/summercamps for the most current information.
Early registration is recommended as the camps fill quickly.
No refunds will be given after the receipt of registration fees and materials.

Partnering Schools
For the scholarship code to use at registration, please contact summercamps@ltu.edu

Questions
Kayleigh Kavanagh
summercamps@ltu.edu

All camps are in session 9 a.m. - 4 p.m.
$850/ day camps
$950/ residential camps
DESIGN STUDIO
FOUNDATIONS OF ART, ARCHITECTURE, AND DESIGN
Design is embedded in all facets of life. It shapes the built environment in which we live, work and play. In this hands-on studio, you will explore how specific design processes might create a world that is more thoughtful, sustainable and sensitive. You will touch on the core principles of design and basic elements of art as you explore real-life situations in the designed world. You will experience how fundamental design principles can be applied to foster great effect in your work. The content of the studio is supported by visiting artists, in-class critiques, and field experiences, including a trip to the Detroit Institute of Arts and more.
Max. number of students: 20

MARKETING AT A GLANCE
This week-long summer camp will provide students an opportunity to get a head start on their business education. In an interactive environment, students will learn about the fundamentals of a business education, general marketing functions and applications, leadership skills, digital marketing skills, teamwork dynamics and presentation skills. Over the course of five days, students will spend mornings and afternoons learning about current and future trends in marketing. Through the summer camp, students will join in interactive learning activities, including games and presentations by business leaders. Field trips to local businesses will be held to inspire students.
Max. number of students: 20

GRAPHIC DESIGN STUDIO
Graphic design is all around us, whether the logo of your hometown team, a poster of your favorite band or the icons on your phone. This camp will emote a real-world studio environment where you'll use industry-standard techniques and software to create a portfolio-ready creative project. Under the guidance of design professionals, you'll learn graphic design tools and techniques, such as typography, composition, image-making and color theory. You will also visit local design firms and hear guest talks from industry professionals.
Max. number of students: 20

MOLECULES IN MEDICINE
Drug discovery is an exciting field at the intersection of chemistry and biology. How are medicinal molecules created and how are they tested before they are approved as medicines? In this summer camp, you will prepare and analyze several common pharmaceutical drugs. You will study their toxicity and medicinal uses using several different model systems, including bacteria, mouse cell cultures, nematode C. elegans, and brine shrimp. You will also visit an on-campus high-tech medical simulations laboratory and will discuss various health-related career paths with an experienced advisor.
Max. number of students: 20

PSYCHOLOGY
Want to explore the human mind, see how the brain works, and learn about the secrets of behavior? In this camp, you'll conduct experiments in human perception, memory, consciousness, language, and social behavior using current research techniques and high-tech devices. You'll learn about behavioral conditioning by training animals to perform specific actions in controlled experimental situations. You'll also be introduced to the main techniques for treating psychological problems so that you can play the role of a clinical psychologist.
Max. number of students: 20

SKETCHING AND VISUAL COMMUNICATION
This session is designed to develop your drawing and representation skills in charcoal, graphite, ink, and marker to prepare you for a career in architecture or design. In this hands-on session, you'll observe, draw, and communicate the objects around you and our built environment. The course will demonstrate tools that allow for the connection between hand-drawing and digital media. All exercises will help you develop an understanding of foundational drawing and digital skill sets at the college level. The content of this session is supported by visiting guest critics, in-class critiques, and a field experience to the Cranbrook Art Museum to see the work of world class artists and designers.
Max. number of students: 20

June 21–25, 2021
ARCHITECTURE AND INTERIOR DESIGN: 2-DIMENSIONAL DESIGN TECHNIQUES

Explore the architectural design process through drawing. In this session, you’ll learn about the fundamentals of drawing, orthographic projection, and design through the completion of a small-scale architectural project. You’ll have one-on-one time with the instructor, participate in group critiques, and prepare a final presentation. The content of this session is supported by visiting architects, in-class critiques, and field experience to local design events or a visit to Detroit-area architectural firms and noteworthy architectural works.

Max. number of students: 20

BIOMEDICAL ENGINEERING

Explore the role of a biomedical engineer in designing procedures and equipment that assist in the prevention, diagnosis, and treatment of disease and injury; make medical testing less intrusive; and enhance the quality of life for people with disabilities. Team projects will acquaint you with basic engineering design tools and the instrumentation used in medical settings.

Max. number of students: 20

BIOTECHNOLOGY

In a research lab setting, you’ll genetically engineer bacteria, purify and quantify proteins, and learn how to clone genes. You’ll apply modern DNA profiling techniques to solve crimes and use high-tech tools to diagnose diseases and track infectious outbreaks. Your days will be filled with hands-on experiments.

Max. number of students: 20

CIVIL ENGINEERING

Do you want to design and construct sustainable buildings? Bridges and highways? Create a cleaner environment? Civil engineers do it all. Learn how these professionals solve worldwide problems like supplying people with clean water and building safe structures and roads. With the help of knowledgeable faculty and current students, you’ll work in teams to build structures, conduct experiments, and compete in creative challenges. You’ll visit Michigan’s SEMTEC, a world-class traffic management center, and learn about the cutting-edge work being done in the field today.

Max. number of students: 20

INTERACTION DESIGN: CREATE A MOBILE APP

Explore the tools and techniques used in the emerging field of interaction design to create a functional prototype of your own mobile app. In a hands-on studio environment, you’ll ideate, experiment and test your design, while learning about user experience (UX), user interface (UI), and design-thinking strategies. Walk away with a portfolio-ready project. You will also visit local design firms and hear guest talks from industry professionals. No prior experience necessary.

Max. number of students: 20

PRODUCT DESIGN AND INNOVATION

Product designers create the products we use today and innovate new ones for tomorrow, including electronics, toys, footwear, tools, sports equipment, and medical devices. In this session, students will learn about the product development process and the methodology used by industry designers to innovate new work for consumers through the development of an original product. This work will utilize an array of approaches, including iterative sketching and cutting-edge digital tools. Professional designers will visit the camp, offering visual communication demonstrations and a critique of student designs.

Max. number of students: 20
ARCHITECTURAL ENGINEERING: IMAGINE A WORLD WHERE PEOPLE, PLANET AND PLACES ARE HEALTHY, SUSTAINABLE AND RESILIENT

Looking to go green? Want to reduce energy use and preserve our natural resources? Take your art skills, creativity, imagination, and interest in architecture, engineering, and the building sciences to the next level by learning how to create a more sustainable world. Architectural engineers design high-performance buildings that are durable, safe, healthy, and economical. Hands-on projects, group activities, and field trips to a green building site and an architectural engineering office are just a few of the fun activities planned for you! A final project will cap off this exciting week of learning and collaboration.

Max. number of students: 20

ARCHITECTURE AND INTERIOR DESIGN: 3-DIMENSIONAL DESIGN TECHNIQUES

Explore the architectural design process through drawing and model making. In this session, you will learn about the fundamentals of creating an architectural space through creative model-making, two- and three-dimensional design iteration, and interior design through the completion of an architectural project. You’ll have one-on-one time with the instructor, engage in group exercises and critique, and participate in an exhibit installation for the final presentation. Visiting artists, in-class critiques, and field experiences add to the content of the class.

Max. number of students: 20

AUTOMOTIVE ENGINEERING

Where better to learn about automotive engineering than at Lawrence Technological University, whose alumni led the design teams of the GTO, the DeLorean, the Taurus, and countless other vehicles? This camp will expose you to the fundamentals of vehicle design and performance. You’ll participate in activities in LTU’s engineering laboratories and visit an automotive industry lab that is involved in the design and manufacturing of modern-day vehicles.

Max. number of students: 20

BUILD YOUR BRAND FOR LIFELONG SUCCESS

What do you think of when you hear the names McDonald’s, Nike, Mahatma Gandhi, or Martin Luther King, Jr.? Whatever comes to mind is part of the brand that company or person has established. You can develop your personal and professional brands too as you consider how you can stand out in the workplace and in life. Through skills, assessments, and collaboration, you will become more aware of your personality, leadership style, and strengths. This will build the skills and character needed to develop your brand and successfully set yourself apart. You will finish the camp with a portfolio demonstrating your brand and successfully set yourself apart. You can use these new skills to recognize your personal and professional brand.

Max. number of students: 20

COMPUTER NETWORKING AND CYBERSECURITY

Explore the role of a computer networking and cybersecurity engineer. Learn the fundamentals in monitoring and identifying problems in modern computer networking environments. Gain a better understanding of the design, motivation, and analysis of the basic building blocks of secure computer and network infrastructure. You’ll get hands-on experience with basic computer monitoring tools used to troubleshoot and improve computer network security. Exciting tours will enhance your experience.

Max. number of students: 20

ELECTRICAL AND COMPUTER ENGINEERING

This hands-on camp covers the basics of electrical and computer engineering. Topics covered include basic computer programming, understanding how a computer works, and learning electronic components, including transistors. You will walk away with an Arduino-based kit, a digital multi-meter, electronic components, and a game project, which you will have programmed and soldered. By the end of this camp, you will have had hands-on experience with the C programming language, wiring schematics, constructing circuit boards, and testing for functionality.

Max. number of students: 20

GAME ART: FUNDAMENTALS OF CHARACTER AND WORLD DEVELOPMENT

Explore the tools and techniques used in the world of video game development. In this camp, you’ll learn fundamental information on game design from artists, programmers, and professionals in the industry. You’ll produce a 2-D pixel art and stylized art assets, 3-D brush design demonstrations within the Unity Game Engine. By the end of the week, you will have developed a number of portfolio samples and fully-functioning and publishable game prototype as part of a team game art portfolio.

Max. number of students: 20

GAME DEVELOPMENT OF CHARACTER AND WORLD

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Max. number of students: 20

NANOTECHNOLOGY: THE SCIENCE OF REALLY SMALL THINGS

The hidden world of very small things – the nanoscale – is a magical place. At the scale of atoms and molecules, materials we use every day behave very differently. The aluminum in your pop can could explode at the nanoscale. Gold is no longer yellow; it can be red, blue, or purple. If you were the size of a nanometer, a single strand of human hair would be about 100,000 times taller than you and the head of a pin a million times bigger. Find out about the exciting and weird world of nanotechnology in this interactive camp.

Max. number of students: 20

ROBOTICS I (BEGINNER LEVEL)

If you are interested in robotics and want to start or build your foundation in robotics but you do not know where or how to start, this camp is the right starting point for you. In this camp you learn about robotics by building and programming robots. You’ll build electronic circuits, learn about sensors and work with an Arduino microcontroller. Moreover, you become familiar with mechanical and electronic parts and programming in robotics and expand your knowledge and interest about the future of robots in modern society. Teamwork and hands-on experiments are the centerpieces of this camp, acquiring basic skills to build robots. This is a prerequisite for Robotics Summer Camp II, which explores programming and controlling of robots.

Max. number of students: 20

TRANSPORTATION DESIGN

Automotive designers are already busy designing the next generation of cars, trucks, and other transportation products. This camp will cover the drawing fundamentals and basic perspectives used by these designers to develop a specific automotive brand. The techniques and processes used in this camp will mirror those used in industry. The content of the camp will focus upon the fundamentals of vehicle design, including explorations into proportion and perspective, and the techniques and processes used in design ideation. Professional designers will visit the camp, offering visual communication demonstrations and a critique of student designs.

Max. number of students: 20
ARCHITECTURE AND DESIGN: ROBOTICS AND FABRICATION

This session will cover the digital fabrication techniques that allow digital designs to be physically created at many scales. You will learn how to create a 3-D model that can be 3-D printed or robotically milled on a Computer Numeric Controlled (CNC) machine. You will work with instructors one-on-one to learn, design, and make your creations. The course will be supplemented by industry guest speakers and tours of local fabrication laboratories. You will gain an awareness of how these technologies are changing all disciplines of design.

Max. number of students: 20

GAME ART: GAME STUDIO

In this camp, you will create a full-fledged game prototype that will be published on a digital marketplace and critiqued by local game developers. Students are recommended to have experience in Unity or other game engines or have attended the Game Art: Fundamentals in Character and World Development summer camp session. Working alone or within a team-based, collaborative setting, you’ll assume the roles of designer, programmer, and artist, discovering your talents, interests, and focus. Over the course of the camp, you will develop a game prototype, marketing materials and record footage for the title as part of a mini game art portfolio.

Max. number of students: 20

ROBOTICS II (ADVANCED LEVEL)

Do you want to dive into robotics? If you are familiar with robots and have built one, have been involved in robotics competitions (like FIRST), or participated in the “Beginner Level” camp, this advanced level is for you. The goal of this camp is to help you acquire higher skills and expand your knowledge in robotics by designing, building, and programming more sophisticated and autonomous robots. You will build an autonomous vehicle in a team, make the electronics, use various sensors, integrate them into your code, and learn how to program the robot to operate autonomously and deliver the desired goals. You will work in a team and have your robot compete in the last day of the camp. You then will receive all the required pieces to build your own robot at home. If you want to start learning about robotics, we recommend you attend Robotics Summer Camp I (Beginner Level) offered July 13-17.

Max. number of students: 20

SCIENCE FICTION, SOCIETY, AND SELF

Do you have a passion for science and technology? Do you wonder about technology’s possible effects on individuals and society? Combine your interest in science with your creative curiosity in this camp that offers the rare chance to work exclusively with science fiction across various forms of media. We will explore the founding principles of science fiction, read classic and modern stories, and view films central to the genre. Students will have the opportunity to brainstorm and storyboard their own sci-fi concepts, as well as record their own stories in a “radio play” reminiscent of Orson Welles’ classic broadcast of War of the Worlds. Whether you are new to science fiction or a longtime fan, this camp is for you!

Max. number of students: 20