International Summer School 2019 Zagreb & Šibenik, Croatia



providing top quality education for 21 years

undergraduate (bachelor) study programs

graduate (master)
study programs

faculty members and experts

1000 + students in higher education

students annually –
career programs, courses,
undergraduate, graduate
and MBA programs

15.000

+ 22% annual growth of freshmen

of graduates employed within 26% six months after graduation.



Igebra University College is the flagship of the largest private educational organization in Republic of Croatia and the region training altogether more than 15.000 unique students annually in higher educational and lifelong learning programs. In higher education we currently have around 1000 active students with the intake of more than 300 new students each year, while the growth rate in number of enrolled freshmen students is around 22% each year. Today, we organize five undergraduate and seven graduate study programs:

#### Undergraduate professional program

#### **BACHELOR**

Software engineering

System engineering

**Multimedia** computing

Digital marketing

**Visual Communications Design** 

#### Graduate professional program

#### **MASTER**

Software engineering

System engineering

Game development

Data science

Digital marketing

Design & Communications

Management

e-Leadership MBA

#### What makes us different?

- Our students acquire knowledge necessary for rapidly growing industries that are based on digital technologies
- We develop programs according to the needs of employers and technological development
- We are proud of our Algebra LAB as the center for the applied research with focus on various research, academic and commercial projects involving triple helix approach and with active student-industry professional collaboration and engagement.

## THE BEST PROFESSIONAL STUDY PROGRAM CERTIFICATES



We offer professional study programs of the highest quality in Croatia according to the results of the evaluation of the quality assurance system carried out by National Agency for Science and Higher Education – ASHE.



The "eSkills for Jobs" initiative encourages the development of ICT profession in the EU and the DigitalEurope organization has entrusted us with the implementation of their project in Croatia since 2012.



We are the only institution in Croatia that has met the quality criteria of the Dutch-Flemish accreditation agency NVAO.

### European Big Data Hackathon 2017

Our Algebra LAB scientists won the European Big Data Hackathon in 2017, an event organised by the European Commission (Eurostat) which gathered 22 teams from all over Europe to compete for the best data product combining official statistics and big data to support policy makers in one pressing policy question facing Europe.

#### **Microsoft Partner**

2014 Partner of the Year Winner

We are the best educational organization in the world among 3,200 organizations evaluated by Microsoft!

#### **OUR PARTNERS**

WE COOPERATE WITH RENOWNED HIGHER EDUCATION INSTITUTIONS, ACTUALLY, MORE THAN 100 AS DESIGNATED ON THE MAP:



#### **OUR ACADEMIC PARTNERS**

Algebra University College is a member of the most renowned academic IT initiatives



Microsoft Imagine Academy Program Member

























#### INTRODUCTION

Igebra's International Summer School lasts for 3 weeks, and a huge emphasis has been put on the quality of the study program, lectures, professors and even participants who have confirmed quality of the curriculum to be the main reason for choosing ours among many other European Summer School programs. Professional curriculum drives interest among young people around the globe, who will collect lot of wonderful memories through studying, spending time together and traveling within organized field trips around Croatia.

Taking care of the trends in the digital world, we have designed various programs with the focus on areas like Artificial Intelligence, Cyber Security, Digital Marketing, Digital Sculpting Fundamentals, Internet of Things and Mobile Application Development.

#### Welcome to Algebra's International Summer School!

By accepting the certification and the newest technology as our guidelines, we have consciously taken the obligation to constantly upgrade and adjust our courses and educational programs with the demands of the industry. However, it is not about a race with technology, it is about identifying and predicting global technological and business trends which have shaped global labor markets and will continue to do so in the future.

#### All work and no play makes Jack a dull boy!

Our Summer School program is anything but boring, it is more than lectures and workshops - you will have time to meet outstanding and ambitious colleagues as we share the magic of Croatia with you. We want to introduce you to some of Croatia's world-renowned places and its rich cultural and natural treasures. The program offers a fantastic summer experience in two cities: Zagreb, the Croatian capital, and Šibenik, one of the most beautiful cities on Croatian coast. This program enables students to explore the rich cultural and historical heritage of Croatia, field trips to Plitvice lakes - the most beautiful National park in Croatia as well as visits to quirky museums. Expect plenty of fun, excellent food, unique events, art, but also a genuine summer atmosphere on the streets of Croatia's capital - Zagreb and Šibenik.

### Make your summer 2019 unforgettable! Join us at the best summer abroad program in Europe!

Let's create digital future together!

Algebra International Summer School Team



#### **CHOOSE YOUR SUMMER COURSES**

EARN 6 ECTS/3 US CREDITS PER COURSE

Most students take one course during the summer, but if you are eager to learn more, apply for two courses and earn up to 12 ECTS this summer.

#### Choose your perfect combination of courses!

ARTIFICIAL INTELLIGENCE TODAY AND IN THE FUTURE

CYBER SECURITY
THE FORC3 IS STRONG WITH THIS ONE

DIGITAL MARKETING
NEW WAYS OF COMMUNICATION

DIGITAL SCULPTING FUNDAMENTALS
LEARN THE BASICS OF SCULPTING IN ZBRUSH

INTERNET OF THINGS
CREATE A WEATHER MEASURING SYSTEM WITH
CLOUD VISUALIZATION

MOBILE APPLICATION DEVELOPMENT FROM IDEA TO CREATION

DATA-DRIVEN STORYTELLING
CREATE STORIES USING BIG DATA AND ADVANCED
VISUALIZATION

CREATING A DETAILED PROJECT IN 3D FROM THE VERY BASICS TO POSTPRODUCTION OF THE FINAL IMAGE



#### ADDITIONAL WEEKLY WORKSHOPS

FINANCING EARLY STAGE STARTUPS

**CROATIAN LANGUAGE & CULTURE** 

# Father of DACTILOSCOPY fingerprinting as a method of identification CROATIA Ivan Vučetić (1858 - 1925)

## ARTIFICIAL INTELLIGENCE

#### **TODAY AND IN THE FUTURE**

The industry is investing more and more resources into tools and training to help data scientists, developers and businesses at large to gain a better understanding of data and the human impact of Al. Al can help more organizations drive business value and competitive advantage from various of their resources, especially their data. Exciting times are ahead, let this course guide you towards Al future!

rtificial intelligence has been a fascinating concept for society in past decade, and we are finally getting close to making AI a reality. Generally, we are witnessing significant improvement of various technologies all related to AI influence which drives demand for understanding not only how to use and implement such technologies but to understand basic concepts of how selected components really work.

In order to fully understand how AI will impact the future of work, this program seeks to explore the core features of AI technologies from a business and user perspective. Students will understand why AI's social aspect is important and how complex it is to create efficient one. Furthermore, be prepared to use your innovation skills and to advance it to next practical level. Once being able to understand key AI components, complexity and enabling components, we can start discussion how to successfully invoke AI in our life. Prototyping process begins with simple question: Can you create simple but efficient Al solution scenario by covering "all important" aspects? Selecting appropriate or at least most adoptable technology model can be crucial for success either target is to impress or to score for profit. Play with solutions using prepared scenarios and create your own with specific target customer/industry in mind. Once you master experimenting, it is time to push your imagination to limits and create our story. Share your story with public and improve your AI skills in a group. Finally, use this skill to learn how to quickly and efficiently navigate through business with flying colors.

Wrapping up, we are ready to take a look in the future. What can happen in year or so? How our use cases will evolve and how fast our current skills will become obsolete. We will talk about chat bots, smart contracts and future-to-be cases. Teamwork and individual pitches will be presented for mentor and participants evaluation.



### CYBER SECURITY

## THE FORC3 IS STRONG WITH THIS ONE

Get to know the "dark side" of security and how to use "the force" the right way. In this course, the students will learn how to use their computer without exposing it to most of the threats lurking outside, whether this is simple Internet browsing, "innocent" usage of publicly available Wi-Fi or usage of "secure" corporate network.

yber security is an ever-evolving field with opportunities waiting for everyone with the interest to learn more and develop their skills in this interesting and demanding topic. This course will show the basic steps most of the hackers would go through while compromising the victim's computers and it will define some interesting known and less known attack vectors and protections against them.

Students will not only have a chance to compromise many vulnerable machines by using different attack vectors, they will also gain knowledge that will help them protect their computers and networks against the attacks covered in this course. The course will also cover some of the latest attacks and methods used in the wild.

The prerequisite for this course is the understanding of the basics of operating systems, network and web applications. Nevertheless, the important concepts will be delivered during the class as a refresher. Everyone brave enough to step into this class will be rewarded with the knowledge that is heavily sought after not only in military/government sector, but also in any security-aware corporation/company.



### DIGITAL MARKETING

## NEW WAYS OF COMMUNICATION

he course will introduce students to digital marketing strategies and user behaviour, from content marketing, search, social to analytical tools used to track the success of digital campaigns.

The digital revolution completely changed the way organizations approach their core business from creating products and services, managing customers to marketing and sales. Digital platforms introduce new ways of communication with end customers allowing companies to tailor products and services to customer's needs in a more agile

manner. In a way, digital marketing changed traditional marketing, making it fast, more precise, real-time and data-driven. The tools marketers use every day allow us to execute digital campaigns targeting audiences across the world much more efficiently and with smaller budgets than traditional marketing. In this course, we're going to examine the basic concepts of Digital Strategy, starting from understanding the company business model, product, customer, market and business goals as well as how to accomplish their marketing goals on digital platforms.

During the course, students will acquire Google AdWords and Google Analytics Certificates



Inventor of PARACHUTE

Faust Vrančić
(1551–1617)



## DIGITAL SCULPTING FUNDAMENTALS

## LEARN THE BASICS OF SCULPTING IN ZBRUSH

Digital Sculpting with Pixologic **Zbrush has become the Industry** standard for creating state of the art visuals for film, television and games alike. More than that it is the go-to software for any kind of sculptural and elaborate objects for purposes of 3d printing, rapid prototyping, prop and mask making for film and many other uses. The software provides unparalleled freedom to create rich and highly detailed digital models and sculptures in numerous art styles and expressions. Sculpting is done using a pressure sensitive tablet and is very akin to traditional sculpting and drawing and all of the traditional art techniques are incredibly useful and relevant.

n this course, students will become familiarized with the Zbrush user interface and the most commonly used sculpting tools and practices. The course will be focused on using few very powerful sculpting tools and techniques in Zbrush which make for a straightforward sculpting style and provide fantastic foundations for any future artistic projects. Students will be taken through the complete process of organic sculpting using various photo references. The course will explain the importance of silhouette, primary, secondary and tertiary forms. Students will explore different methods of object and form creation and manipulation and learn different techniques of sculpting. The course will focus on the understanding of sculptural form through several different subjects each focusing on a different problem. Students will be introduced to the Zbrush workflow and the possibilities of developing or incorporating Zbrush into their art practices. This approach enables students to develop their understanding, knowledge, and skills and improve on a step by step, subject by subject basis. The

course will teach students to recognize and interpret the character and flow of shapes through subject matter analysis. Students will explore how to express their interpretations of subject matter and achieve accurate, high fidelity sculpts (relative to their artistic background). Through the course, the students will create several character/creature busts through which they will explore and learn the usage of various tools and sculpting methods. The entire course will be as personalized as possible where the level of the sculpting problem will be suited to the individual student. One of each student's sculptures will be elaborated on creating a high-fidelity sculpt which will show to demonstrate the student's abilities.



Serious Sam

Award-winning game developed in Croatia by Croteam

# Farmeron running US Dairy Farms on Croatian Sofware CROATIA

## INTERNET OF THINGS

## CREATE A WEATHER MEASURING SYSTEM WITH CLOUD VISUALIZATION

This course covers IoT systems, the Raspberry Pi platform, and the ESP8266 environment for building devices that can sense and control the physical world. We will introduce the students to the concept of the Internet of Things, its role, components, current status and future directions of development. We will dive into the Raspberry Pi and ESP8266 environments, IoT most used protocols and learn to connect devices to Cloud services in order to achieve a complete solution.

nternet of Things solutions have become an important part of everyday life. In this course, you will be able to learn about IoT principles and how to use popular platforms to create such a practical IoT application.

This course is about building smart systems called IoT systems and it has two main goals: first, to teach students about architectures and building blocks of such systems, and second, to motivate students to envision

their own applications of such systems. After successfully finishing this course, students will be able come up with a simple IoT application and build it.

An IoT system architecture typically consists of microcontrollers, sensors, actuators and protocols. There are many choices when it comes to microcontrollers, varying both in strength and capabilities and in prices. In this course, we will learn about and use two popular microcontrollers together with their working environments: ESP8266 and Raspberry Pi. The ESP8266 platform is very popular mostly because of its integrated WiFi capabilities and the ease of use, while Raspberry Pi is popular for being very cheap but powerful Linux-based development platform. We will use sensors such as temperature, humidity and CO2 sensors and export their readings via standard protocols (MQTT, TCP/IP) to Cloud service, where they will be stored in database and visualized.

As a prerequisite, students should have at least basic programming skills in any objectoriented language.

# MOBILE APPLICATION DEVELOPMENT

#### FROM IDEA TO CREATION

The use of mobile technology is an opportunity to expand customer relationships. Your cellphone is always on, always at hand and knows where you are. Mobile phones are a useful tool that adds value. The industry of mobile applications definitely has a prosperous future.

he course is focused on preparing participants for independent work and further learning. After successful completion of the course, participants will be able to implement applications that use dialogs, menus, user preferences, background services, sqlite database, google maps and location services, web services, phone and SMS features.

Android application development course is performed in Java programming language and is carried out in Android Studio integrated development environment using Android emulator. Hence, its requirement is basic knowledge of programming and Object-oriented paradigm (Encapsulation, Inheritance, Polymorphism, Abstraction), but it is not restricted to Java programming language.

The course starts with the presentation of the Android architecture through Android Software Stack, basics of Android Operating System and a Virtual machine used in the emulator. Further, it is concentrated on basic components to implement scalable Android applications (Activity, Service, BroadCast Receiver, Content Provider and Intent). All the building blocks are covered in great detail with many examples and variations in layout presentations.



m-Parking

 1st global mobile parking payment system
 Infoart group



## DATA-DRIVEN STORYTELLING

## CREATE STORIES USING BIG DATA A ND ADVANCED VISUALIZATION

Storytelling skills are considered to be among most important skills today, the skills we all should practice, and when empowered with data they can create very powerful tool in many industries including digital marketing.

ur society is based on "stories" that are the basis for the way we communicate, live and dream. In the introduction to the lecture, a short section of technology development will be elaborated with a special focus on EDU / government / business (learning by doing) and data science, as well as advanced visualization. We will describe and conduct a characteristic data science project and show some techniques

related to the big data infrastructure, and the way we use mathematical rules for various activities in the phases of these projects. In the lecture, through a practical view, we plan to show how to use data and advanced visualization tools combined with large data sets to gain content and the way we can tell the story with the help of this content.

The course aims to introduce students to think out of the box and create interesting and, more important, relevant stories using data. In order to do that students will master different techniques of visualization and exploratory data analysis. Students will acquire a necessary theoretical and practical knowledge and skills in the field of data science that is characterized by large volumes of data. Apart from technique, students are introduced to a variety of tools for visualization and exploratory data analysis.





Inventor of DOUBLE ENTRY BOOKKEEPING

# CREATING A DETAILED PROJECT IN 3D

FROM THE VERY BASICS TO POSTPRODUCTION OF THE FINAL IMAGE

Students will learn the advanced principles of creating a 3D project, taking into consideration the technical and work-related challenges. The entire process will go through each step of production in detail, crafting the final image as close to photorealism as possible.

of bringing something to life, that as such exists or will exist in a form of visual expression. As visual beings, we must commit first and foremost to the recognition of the visual communication. If we fail to accomplish that, the message will be lost to the viewer. Therefore, every step of the way in a 3D project is followed by extensive research on the subject, numerous iterations and fine tuning that culminates in a desire to make it flexible for change and improvement.

The course is designed to introduce students to the 3D, ranging from modelling, texturing, simulation, lighting, rendering and postproduction. Although a broad field, the course will be a focused effort to specifically address practical and proven ways of preparing a project from start to a final image. The course will continue to elaborate on certain dependencies between stages in production, flexibility and preparation, elements and postproduction. Each step and action will be addressed from a standpoint of all included elements preparing the students for an easier stage in postproduction and final image processing.

The entire process will be specific to the project due to the time limitations, yet the methodology will far outweigh the scope of the project and can be implemented in current 3D workflows from freelance to studio work. The knowledge given will further expand on the

advanced use of techniques and simulation effects in order to cut the production time and avoid manual and tedious work in 3D. Further efforts will be focused towards crafting details and preparing them for the final stages of image manipulation. Each step into the production should by then have its place in the environment that represents the visual goal of the project. From preparation of the postproduction and from the postproduction standpoint, every information is a valuable stepping stone in the image manipulation. Translated to postproduction it represents easier and more streamlined way of altering, retouching and colour-grading of the final image, which is suitable for fine tuning and change requests. CROATIA

Inventor of MECHANICAL PENCIL AND FOUNTAIN PEN

Slavoljub Penkala (1871 – 1922) ADDITIONAL

FREE WORKSHOPS

Financing early stage startups
How startup funding and investing
works

arly stage startups are often linked to high risk of falling into the "funding gap". This might kill even most innovative ideas! With this workshop you will understand and prepare yourself to avoid this risk, and when the time comes for pitching your project to funders (friends & family, venture capital, business angels, crowdfunding, banks, public funds, cofounders, employees) you will have much better chance of success in securing the funding of your startup.

#### **Croatian Language and Culture**

he international course of Croatian language and culture will develop your speaking, reading and writing skills in Croatian and will offer an excellent insight into relevant factors of the Croatian cultural identity. You will also have lots of fun during the workshop and will prepare yourself to meet new friends. Even if you are not so successful, you will at least know first few lines to approach interesting girls and boys. Who knows what might happen next...



### QUICK FACTS APPLICATION

#### **APPLICATION**

he Summer School application process is carried out online. Applications are reviewed on a rolling basis, once you submit your application the admissions team will contact you to schedule an online interview. Applications must be submitted before April 30, 2019. Places are limited, so make sure to apply on time.

#### STUDENTS PROFILE

ighly enthusiastic and motivated students interested in the field of technology, applied science, social sciences, and humanities as well as students who aspire to personal growth and effective start of their career.

#### LANGUAGE OF DELIVERY English.

he Summer School Program is intended for students with at least a pre-intermediate level of English and is not suitable for beginners or students with elementary level of English.

#### **APPLY FOR SCHOLARSHIP**

Check out all of the scholarship opportunities @ summer.algebra.university

#### **TUITION FEES**

	One course	Additional course
Full Tuition Fee	1500 €	600 €
Early bird Tuition Fee*	1275 €	500 €

\*for the students enrolling before February 28, 2019

#### THE TUITION FEE ALSO INCLUDES:

#### **ADDITIONAL WORKSHOPS**

(Financing early stage startups, Croatian language and culture)

#### **CULTURAL VISITS:**

Memorial Center Nikola Tesla, Smiljan; National parks; quirky museums

#### **SOCIAL PROGRAM:**

Zagreb & Šibenik day trips and historical sightseeing

#### STUDENTS WILL BE AWARDED 6 ECTS/3 US CREDITS PER COURSE.

- Ask for information about special prices for groups and partner universities.
- If you are eager to learn more you can take additional course from the list and earn up to 12 ECTS/6 US credits.



#### **ACCOMMODATION**

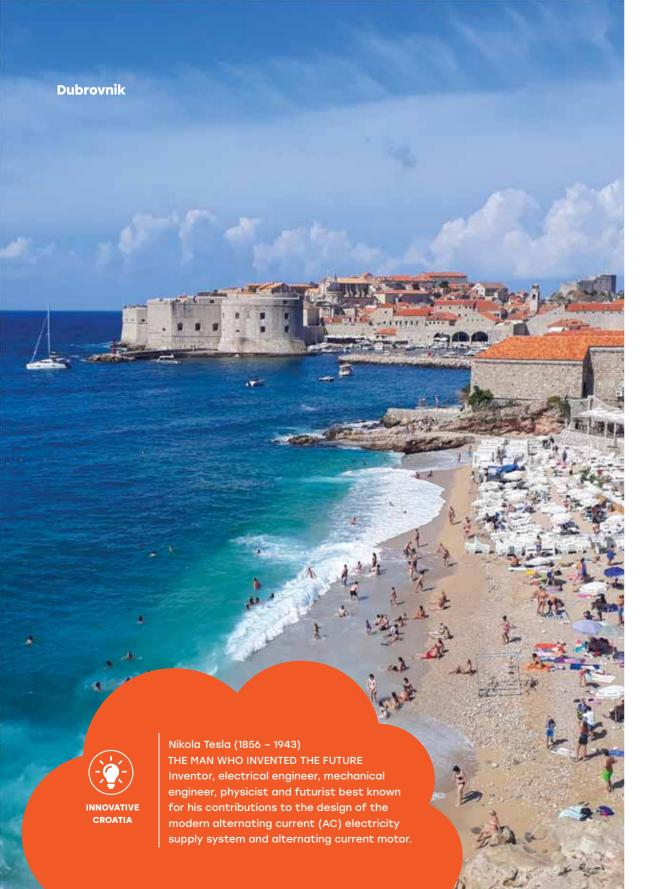
## RECOMMENDED PRICE = 400 €

in the tuition fee. The price for accommodation during a three-week Summer School course is approximately 400 EUR if you stay at Chillout Hostel in Zagreb and Hostel Splendido in Šibenik. All spaces facilitate the student life to the fullest and allow students to live a unique experience. Both hostels are modern & urban designed, located in the heart of Zagreb and Šibenik.

We recommend you book your accommodation before April 30, 2019.

f you do not wish to stay in the hostel, you can alternatively look for private accommodation on your own. We will be happy to assist you in the process of finding a flat by providing helpful links to various rental agencies that offer short-term apartment rental. private Although prices accommodation in Zagreb may vary depending on the city area, the size and amenities that apartments include, we would be happy to assist you in finding your accommodation.





#### **CROATIA**

#### YOUR "LIVE AND LEARN" SUMMER DESTINATION

roatia is considered one of the safest countries in the world according to The Global Peace Index 2017 produced by Institute for Economics and Peace (IEP), ranked 31 among 163 countries.

Croatia is one of the sunniest spots in Europe. You should expect 13 hours of sunshine a day in July. More than 10 million people choose Croatia for their holidays.

Croatia is the home of the tie, automatic pencil, parachute and other inventions which have transformed human existence, several of which are used in everyday life.... Croatia is also the birthplace of Marko Polo, Nikola Tesla, and many more outstanding individuals.

#### Croatia - a small country of World's Greatest Technological Innovators

Aside from the beautiful coast and great cultural and historical heritage, Croatia has been recognized for innovation, global reference projects, export of the best business-technological practices, as well as great professionals recognized for their skills and expertise all over the world.







#### City of Zagreb

agreb, one of the oldest European cities, is not only administrative but also the economic, diplomatic and cultural capital of Croatia, with a population of almost one million.

It is also a university center with forty higher education schools and over 85,000 students, a city that is proud of its long history of education: the first secular city school was built in the middle of the 14<sup>th</sup> century, the first secondary school was founded at the beginning of the 16<sup>th</sup> century and in the second half of the 16<sup>th</sup> century, Zagreb had its first university.

Zagreb is a city of science and culture. The city has approximately fifty museums and galleries, as well as private art collections and about twenty theatres and music venues. Many open-air events and exhibitions are organized from spring to autumn. While walking down the streets of Zagreb, you can admire the architecture, which mostly dates back to the Austro-Hungarian Empire.

Even though Zagreb is a Central European city, in many ways, it has a Mediterranean way of life. Great atmosphere and friendly local people are the biggest values of Zagreb.

#### Summer at the Stross 2018 – Strossmartre

Strossmartre or "Ljeto na Strossu" lasts from May until September. It all takes place in the open, on a beautiful walkway popularly called Stross.

Daytime is reserved to enjoy the works and crafts of local artists. The bar opens late in the afternoon and live music spices up the evenings.

Romantic ambient of the upper town Zagreb intensified by a glass of wine is what has made this "all-summer-event" the most popular getaway from the daily routine. It's a sure way to forget you're in a busy capital and a great chance to meet locals.





#### City of Šibenik

ibenik is a city on the Adriatic coast in the picturesque and indented bay where the Krka river one of the most beautiful karst rivers in Croatia enters the sea. It is also known as a gateway to the Kornati Islands. The 15th-century stone Cathedral of St. James is decorated with 71 sculpted faces, and it has been on the UNESCO World Heritage List since 2000. Nearby, the Šibenik City Museum, in the 14th-century Prince's Palace, has exhibits ranging from prehistory to the present. The white stone St. Michael's Fortress has an open-air theater, with views of Šibenik Bay and neighboring islands. Šibenik is a city of great history full of modern attractions. Impressing charm of the old town takes your breath away. While the oldest monuments date back to the 11th century, the city development reached its peak in the late Middle Ages. Today it offers a number of interesting places worth visiting

#### INTERESTING FACT:

Jaruga Hydroelectric Power Plant, a hydroelectric power plant on river Krka, near Šibenik was the first alternating current (AC) power system in Croatia, the first commercial hydropower plant in Europe, and second in the world. It was set in operation on 28 August 1895 at 20:00, two days after the Adams Power Plant on the Niagara Falls. It was designed to power the street lights in Šibenik, making it the first city in the world with street lights powered by a polyphase system of alternating current (AC).

Have a creative, inspirational and educative summer in Croatia with Algebra!



#### **Banj City Beach**

Magnificent view of the old town of Šibenik falls from the city beach that opened only a few years ago. You can play volleyball or refresh in the nearby bar. It is the most beautiful beach in the Adriatic, a cult beach of the Šibenik riviera.



#### **ZAGREB**

Algebra Campus

#### **Plitvice Lakes**

National Park

Smiljan

Birthplace house of Nikola Tesla

National Park

ŠIBENIK



#### **ALGEBRA**

#### INTERNATIONAL SCHOOL

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#### summer.algebra.university

will: (i) endeavor to keep any changes to a minimum; (ii) take all reasonable steps to minimize disruption to students; and (iii) keep students informed contact us at summerschool@algebra.university







