WARSAW
19-24 SEPTEMBER 2014

WELCOME 2 UW

EUCYS 2014
WARSAW

UNIVERSITY
OF WARSAW

TABLE OF CONTENTS

GET TO KNOW UNIVERSITY OF WARSAW – THE BEST AND LARGEST INSTITUTION OF HIGHER EDUCATION IN POLAND.

FACTS AND FIGURES

200 years of tradition
20 faculties & **29** research units
50,000 students and doctoral students
7,000 employees
3,300 research topics per year
300 million euro budget
2,000 courses in foreign languages and 20 English-language programmes
5.8 million library's holdings

WHY UNIVERSITY OF WARSAW?

TOP 2%

Studies at UW hold high positions in international rankings. Taking into account the total number of research universities that reaches 20 thousand, the University of Warsaw is among the top 2% of the world's best universities.

UW ALUMNI WANTED

University of Warsaw conducts the largest research enterprise of its kind in Europe by monitoring the careers of former students. Results demonstrate that having a diploma from the University of Warsaw is a definite asset in the job market; over 80% of our alumni find the job during first year after graduation.

UW is among the top **2%** of the world's best universities

diploma from UW is a definite asset in the job market

UW offers **20** programmes taught in English

SOMETHING FOR EVERYONE

Nearly 50,000 people study at the University of Warsaw every year. The candidates are offered a very broad range of courses in the fields of humanities, social sciences and natural sciences, as well as many interdisciplinary courses combining knowledge and skills of many disciplines.

NOT ONLY IN THE MOTHER TONGUE

UW offers more than 20 programmes taught in English. The candidates can choose from American Studies, Archaeology, Chemistry, Economics, International Business, Political Science, Psychology and more. We provide courses in more than 40 foreign languages, including Hungarian, Latvian, Macedonian, Persian and Hindi. Everyone can participate in them regardless of the main line of study.

MASTERS OF SCIENCE

The leading concepts of the University's activity is the unity of teaching and research. Our teams have won worldwide recognition in many areas of knowledge and have joined international research programmes. Unquestionable reputation has been gained by, among others, the archeologists, paleontologist, astronomers, physicists and chemists.

POPULAR AMONG FOREIGNERS

Polish academies are host to 32,000 people from over 140 countries. The University of Warsaw has the largest overall number of international students, our community includes 3,000 foreigners. The University is mostly visited by students from Spain, Germany, Italy, France and Turkey.

ACADEMIC CITY

The University is located in the capital of Poland, one of the most dynamically developing European cities. Warsaw is the centre of political and economic life and has a lively social and cultural scene. With more than 200,000 people per year getting their academic education here, Warsaw is also an unchallenged leader considering Poland's academic life and one of the largest academic cities in our region of Europe.

FROM DAMAGED COOKER TO CRYSTAL DOPING

Interview with professor Marcin Pałys, the Rector of the University of Warsaw, about how he became a chemist.

Did you ever receive the Kid's First Chemistry Set?

Actually, it was the "Professional Chemistry Set" from the very beginning. My grandmother was a chemistry teacher. At her house there were always many mysterious items, curious substances in various containers which drew my attention. So my interest in chemistry started very early.

AT HOME, I DECIDED TO PRODUCE A COPPER ALLOY MYSELF

What is so interesting in this field?

First and foremost, the experimental character of it. Chemists try to learn the properties of substances or their behaviours. Waiting for the results is very exciting. In chemistry you gain knowledge mainly through your own activities and experiments that involve you personally.

So one could learn chemistry without burying oneself in books?

Not quite. Good knowledge of published works saves us from making experiments which were already done. In chemistry, part of the knowledge are facts

to memorize, but the rest is relations and models, and this knowledge is gained by solving tasks and problems.

IT SMOKED, IT FLASHED, IT BURNED, IT CHANGED COLOURS, IT EMITTED VARIOUS ODOURS

It seems that the most interesting part are experiments, after all. Do you remember your first experiments?

While still in the primary school, at home, I decided to produce a copper alloy myself. Unfortunately, the experiment resulted in the enamel peeling off our cooker, and I had a minor falling out with my parents. In the secondary school me and my two colleagues, we literally took over the chemical lab. The place was really well equipped for those times. It smoked, it flashed, it burned, it changed colours, it emitted various odours. Once we had an argument with a teacher who came to teach the next lesson in the room in which we conducted our experiments. Unfortunately, the smell prevented her from doing so.

I understand that it was not quite the aroma of musk and lotus flower?

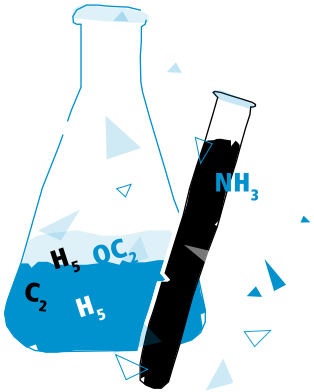
I think it must have been ammonia (NH_3). Thankfully there were no repercussions – teachers were very understanding towards our attempts and encouraged us to experiment further.

And they, did they always succeed?

Not everyone has a knack for it. I remember well one experiment from the physics lesson. Into a mercury barometer one had to inject a bit of diethyl ether ($C_2H_5OC_2H_5$), which evaporated, causing a drop in pressure and lowering the level of mercury. We had a physics teacher who generally failed at experiments. The attempt to perform this one took her the whole lesson. But she did it!

Being a Rector now, do you still have time to conduct experiments?

I teach laboratory classes on inorganic chemistry. In the lab, we carry out doping, i.e. we introduce small amounts of atoms and ions to crystals. These minuscule additions drastically change crystal properties – for example insulators are turned into semiconductors.



PROFESSOR MARCIN PAŁYS

- **44**th Rector of the University of Warsaw, first Rector-chemist,
- completed his studies in just 4 years instead of 5,
- he learnt Dutch in one year, to lecture in Holland,
- he would prefer go to work by bike,
- specialized in experimental chemistry, mainly inorganic and physical chemistry, in particular: transport phenomena in electrochemical systems.

THE FIELDS OF STUDY

When it was established in the early 1800s, the University of Warsaw had 5 faculties. Today, this figure has increased to 20.

S - Students, T - Teaching and research staff

FACULTY OF:

Artes Liberales
S: 155, T: 63

Applied Linguistics
S: 2706, T: 202

Applied Social Sciences and Resocialisation
S: 1480, T: 119

Biology
S: 815, T: 191

Chemistry
S: 807, T: 154

Economic Sciences
S: 1808, T: 99

Geology
S: 680, T: 95

Geography and Regional Studies
S: 1057, T: 96

History
S: 2333, T: 262

Journalism and Political Science
S: 5793, T: 235

Law and Administration
S: 5507, T: 226

Management
S: 5708, T: 138

Mathematics, Informatics and Mechanics
S: 1316, T: 210

Modern Languages
S: 3199, T: 253

Oriental Studies
S: 1090, T: 129

Pedagogy
S: 1483, T: 73

Philosophy and Sociology
S: 1050, T: 157

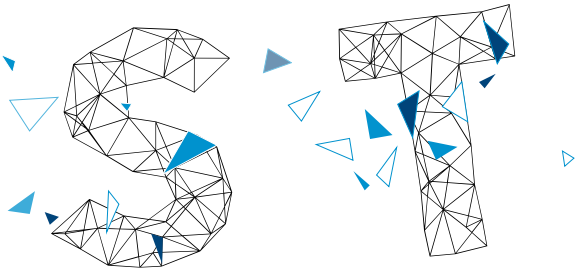
Physics
S: 1029, T: 220

Polish Studies
S: 2561, T: 195

Psychology
S: 1412, T: 97

THE UNIVERSITY OF WARSAW PROVIDES:

- a wide choice of programmes of 1st, 2nd cycle studies and long cycle (uniform) Master's studies,
- **33** programmes of 3rd cycle studies (doctoral) and **6** international doctoral programmes,
- **3** MBA programmes,
- over **150** postgraduate programmes,
- over **300** Open University courses, taught by the University's lecturers and available to everyone above the age of 16, regardless of their education.



THE UNIVERSITY PROVIDES ALSO A NUMBER OF PROGRAMMES, THAT ARE HELD ENTIRELY IN ENGLISH.

If you are interested in studying in the English language, you may choose:

- Archaeology,
- Economics,
- Environmental management,
- European administration,
- Finance, investments and accounting,
- International business,
- International relations,
- Internal security,
- Journalism and communication studies,
- Teaching English to young learners,
- Philosophy,
- Political science,
- Psychology,
- U.S. Cultural Studies

In Polish-language courses, students are offered the selection of some **2,000** subjects taught in foreign languages.

VARIETY OF TOPICS

intercultural dialog history and culture of Jews
LARGE SCALE SKY OBSERVATIONS
GEOGRAPHY OF TOURISM
spatial organization Finnish studies European medical law and bioethics
PORTUGUESE CULTURE STUDIES African studies with a course of Hausa
BIOMEDICAL RESEARCH ON THE BCI
Tibetan studies production of radiopharmaceuticals **ANTHROPOLOGY OF ART**
Hebrew studies **CRIMINOLOGY** food and pharmaceutical industry
INDOLOGY radiological protection **ETHNIC MUSIC** underwater expedition
Baltic studies stability of graphite
PRODUCTION OF RADIOPHARMACEUTICALS **COGNITIVE SCIENCE**
application of nuclear technologies in medicine and industry
BIOMEDICAL RESEARCH ON THE BCI

STUDENT LIFE

Our students participate in research projects, conferences and work in over 250 student learned societies. The University has its own **SPORT**s association, **THEATRE**, **CHOIR**s, broadcasting station, television, and students' magazines. Students receive financial support within the system of need-based and merit-based scholarships.

RECRUITMENT

Application for long-term studies at the University of Warsaw may be done only through the internet: www.irk.uw.edu.pl

UNIVERSITY OF RESEARCH

The University of Warsaw is not only the place of education for students – it is also the biggest and most dynamically developing research hub in Poland and the Central Europe. Apart from 20 faculties, it hosts 29 research centres, some of them – from the point of view of the scope of research conducted in them – absolutely unique.

We have the only experimental centre of nuclear physics with a heavy ion cyclotron, as well as the only research centre in this part of Europe supported by Google – the Digital Economy Lab. Also the Interdisciplinary Centre for Mathematical and Computer Modelling of the University of Warsaw launched last year one of the most advanced supercomputers in Europe, allowing for world-class research in biomedicine and biotechnology.

A GREAT PLACE TO START

The University is the workplace for over 3,500 academic teachers, including 800 professors. Their ranks include experienced researchers with considerable achievements as well as young scientists who – due to excellent conditions offered by the University of Warsaw and the possibility to acquire grants from various sources – are able to set up their own scientific teams and conduct innovative research projects; they recruit Ph.D. candidates and students, who have the possibility to nurture their scientific passions from the very first days at the University. The students congregate in student learned societies, organize conferences, participate in competitions, often with considerable success. For many years, the University of Warsaw teams have been continuously winning or achieving notable results in International Collegiate Programming Contest, Global Management Challenge or the International Genetically Engineered Machine. They also received first grants for research in competitions organized especially for them.

VARIETY OF QUESTIONS

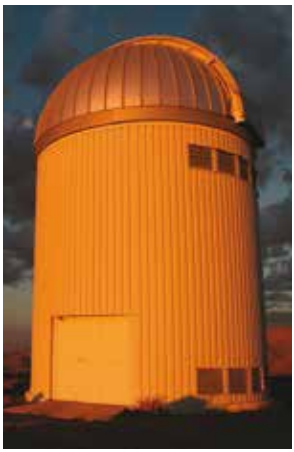
Humanities and social sciences, as well as mathematical and natural sciences – these are the main disciplines offered by the University of Warsaw curricula. However, in their scientific research, our scientists move far beyond these narrow domains, reaching out to solve problems of medical or technical nature. From among 1,300 projects currently going on in our University, the majority is of interdisciplinary character.

NO BOUNDARIES

In today's world of science there are no boundaries, no domains, no countries. The University has over 1,000 foreign centres as partners. The scientists from the University conduct joint projects with their peers from all around the world, such as the University of Oxford, Sapienza University of Rome or Max Planck Institute. We also participate in the biggest European research ventures – we had our share in the creation of the Large Hadron Collider, and currently we cooperate on the experiments conducted there by the European Organization for Nuclear Research. We also take part in projects of the European Space Agency, e.g. in the Planck and Gaia satellite missions.

BREAKTHROUGH RESEARCH

The University's teams have acquired recognition of the worldwide academic milieu in many areas of knowledge. On this page you will find examples of projects and discoveries, which were of fundamental importance to the development of their disciplines.



Astronomers from UW are trying to uncover secrets of the universe. Results of the projects, such as OGLE or ASAS, have made our scientists world leaders in the field of large-scale surveys of the sky. UW is also taking part in numerous international projects, such as Araucaria, H.E.S.S., CTA, LIGO/VIRGO as well as Planck and Gaia satellite missions. Thanks to our scientists, the world has noted, among others, the discovery of system of planets that has striking similarities with our Solar System or the birth of a black hole.

Palaeontology is one of the dynamically developing research fields at UW. In 2010 Grzegorz Niedźwiedzki (former EUCYS laureate) found traces of the oldest quadruped known to science that dared to leave the sea and step onto dry land. The discovery necessitates a reevaluation of the history of evolution. Later that year Niedźwiecki discovered traces of a pre-dinosaur which prove that the beginning of the age of dinosaurs had taken place far earlier than previously thought.

UW archeologist are among the most active in the world, conducting excavation works in the most distant parts of the globe. They carry out projects in Europe, Asia, Africa, North and South America. In recent years, they discovered, among others, unlooted tombs in Castillo de Huarmey that was declared one of the "Top Ten Discoveries of 2013" by the American specialist periodical "Archaeology".

September 2008 witnessed the launch of the most modern particle accelerator in the world – the Large Hadron Collider (LHC), installed at CERN in Geneva. A group form UW has been involved in the creation of one of the four LHC detection systems – the Compact Muon Solenoid. Physicists UW are also contributing to the activities of CERN theoretical section. For a long time, they have been dealing with particle physics beyond the Standard Model, for which the results of experiments carried out at CERN may be of crucial importance.

Section for Sign Linguistics at the UW Faculty of Polish Studies is the first unit in Poland conducting research on Polish Sign Language. The scientists want to develop a comprehensive grammar of PSL and create a visual corpus of sign language. Section is also taking part in international projects, such as EuroSign Interpreter. The aim of the project is to develop educational resources for Deaf people proficient in two sign languages in order to be trained as interpreters. The long-term effect of the research will be the accessibility of Deaf citizens to unrestrained travel, education and employment across borders, and consequently, increased participation of Deaf citizens in the life of Europe.

Relations between quantum field theory and string theory, and mathematical knot theory and random matrix theory – are the subject matter of the project conducted by dr. Piotr Sułkowski from the Faculty of Phisics, financed by the European Research Council. Council encourage high quality research in Europe through competitive funding, it support the most innovative ventures in all fields of the science. ERC awarded grants to 14 Polish scientists, 7 of them are employees of UW.

UNIVERSITY OF NEW INVESTMENTS

The last several years brought to the University a huge development of its research infrastructure. With the EU financing, the UW was able to establish new research centres for representatives of the exact and natural sciences, equipped with the highest class of instrumentation.

BIOLOGICAL AND CHEMICAL RESEARCH CENTRE

The biologists and chemists are searching here for new solutions in power engineering, environmental protection, food and pharmaceutical industry and new metering methods that will efficiently support crime detection or archaeology. The building is equipped with a laser mass spectrometer, X-ray diffra tometers, high-performance liquid chromatography systems or Faraday cages.

CENTRE OF NEW TECHNOLOGIES

Its modern laboratories, didactic, lecture and seminar rooms will be used mainly by the students and employees of the Faculties of Biology, Chemistry, Physics and the Interdisciplinary Centre for Mathematical and Computational Modelling. The scientists of the centre will specialise mainly in application of modern technologies in medicine, monitoring and environment protection, economy or crime detection.

NEW SEAT OF THE FACULTY OF PHYSIC

The new seat of the Faculty of Physics will be the place of realisation of educational and research programmes in the field of the physics and related sciences. It will be an attractive place of work for eminent scientists, an important European research centre. The opening is scheduled for this year.

RADIOPHARMACEU-TICALS PRODUCTION AND RESEARCH CENTRE

It is part of the Heavy Ion Laboratory of the University of Warsaw. It is a research unit where the scientists create completely new radiopharmaceuticals used in medical diagnostics and manufacture radiopharmaceuticals used in the PET diagnostics, that is positron tomography.

WE ARE GROWING

In recent years, the University has put much effort into improving work and study conditions. Since 2010 we have spent 150 million Euro on the construction of new buildings and renovation of the old ones. At present, UW owns 124 buildings, the total surface of which amounts to 400,000 m². We are expanding not only on the territory of Warsaw.

EUROPEAN CENTRE FOR GEOLOGICAL EDUCATION

The Centre is to be located in Chęciny, in a closed quarry on the Rzepka Mountain, where a wildlife reserve was created. University's students will be able to fully profit from the geological values of the Świętokrzyskie Mountains. Some rocks occurring in this area are witnesses of over 500 billion years of the Earth's history. In Chęciny, there will be specialist chemical, geological mapping and geophysical laboratories, a laboratory for preparation of geological samples and a computer room. It will be the destination of field courses for students of natural sciences from the country and abroad, courses of basic and historical geology, micropaleontology or hydrology.

"ARCHEOCELTICA" - CENTRE FOR ARCHAEOLOGICAL EDUCATION

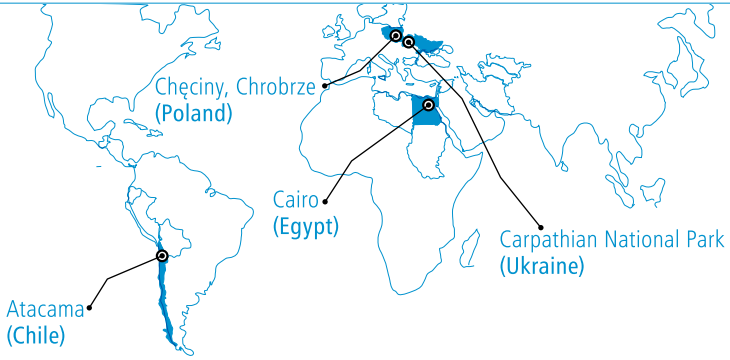
It will be located on the territory of the historic palace and park complex in Chrobrze. The values of this place will be available for tourists as well as for scientists, carrying out archaeological research devoted mainly to the Celtic culture, associated with the beginnings of the European unification process.

...ABROAD

Due to its archaeological excavations, the University is present in over 20 countries on 5 continents. Archaeologists specialising in the ancient history of Egypt have a field station in Cairo at their disposal. Polish telescopes can be found in Las Campanas observatory, situated in the Atacama desert in Chile. Astronomers working there carry out large scale sky observations.

ASTRONOMICAL AND METEOROLOGICAL OBSERVATORY

Contacts with Ukrainian universities are intensely developing. In 2012, the works on restoration of a pre-war building, located on the Pop Ivan Mountain on the territory of the Carpathian National Park, were started. The University of Warsaw supports the main initiator of the restoration – the Ivano Frankivsk University. The old observatory will be the centre of research on the Carpathian vegetation, development of ecology and practical trainings in botany, biology or geology; it will also host an academic mountain hotel and a base of mountain rescuers.



200 YEARS IN A NUTSHELL

The University of Warsaw was established in **1816**, in an uneasy period. The country had lost its independence shortly before, its lands partitioned by the neighbouring powers.

After the fall of Napoleon and the Congress of Vienna, Warsaw was controlled by Russia and so the inception of an university required permission from Tsar Alexander I. When this was finally obtained, a city of a hundred thousand inhabitants that Warsaw was then could boast of a university encompassing **5** faculties, having some **800** students and the staff of about **40-50** professors.

Throughout the 19th century the history of the university reflected the history of Poland. When uprisings against the occupying powers broke out, the students invariably participated. When they failed, the University got closed (in 1831 and 1869).

Due to the vigorous Russification of Poland, from **1869** until **1915** Russian was the language of instruction at UW and the rectors were always Russians. Polish was introduced as the language of instruction during the First World War.

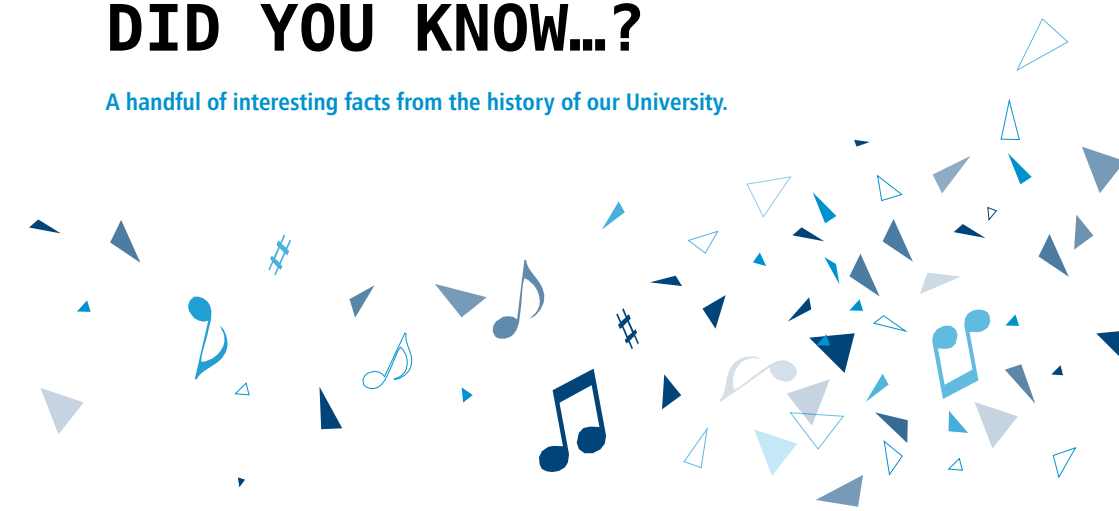
Poland regained its independence, and the University a full freedom of teaching, in **1918**. It was then that our Alma Mater became the largest in t he country.

After the outbreak of the Second World War the University was closed. Yet despite the enormous war losses it was back in operation in **1945**. After the difficult period of the communist rule, the University regained full autonomy in **1989**.

Today the University of Warsaw is the largest and the best university in Poland at the same time.

DID YOU KNOW…?

A handful of interesting facts from the history of our University.



ALMA MATER

University of Warsaw is the oldest institution of higher education in the capital of Poland, from which some others, like the Academy of Fine Arts, Warsaw Medical University or Frederic Chopin Music University have originated.

ROYAL RESIDENCE

The oldest building in the University of Warsaw campus is the Kazimierzowski Palace. It is almost 400 years old and for some time in its history it served as a summer residence of Polish kings. Nowadays, it is the seat of the University's management and administration.

APARTMENT OF A FUTURE PIANIST

In the main campus in the years 1817-27 lived with his parents one of the most famous students of the University – Frederic Chopin. As the father of the great Polish composer, Nicholas Chopin, taught French here, the Chopins received a tied accommodation. Frederic Chopin later studied at the Main School of Music, operating in the University.

DOCTORS OF HONOUR

The first honoris causa doctorate of the University of Warsaw was awarded to the marshal Józef Piłsudski, one of the most prominent Polish politicians of the 20th century. The ceremony took place on the 2nd May 1921. In the history of the University of Warsaw, honorary doctorates were also disbursed to other politicians, including Herbert Hoover (US president), Ferdinand Foch (marshal of France), Otto Strandman (State Elder of Estonia), Ignacy Mościcki (president of Poland), Boris III (king of Bulgaria).

NOBEL PRIZE STUDENTS

Czesław Miłosz – the laureate of the 1980 Nobel Prize in Literature, studied at the Faculty of Law in 1932, and during the World War II he worked at the University as a caretaker.
Henryk Sienkiewicz – Polish writer, winner of the 1905 Nobel Prize in Literature, awarded "for his outstanding merits as an epic writer".
Menachem Begin – prime minister of Israel from 1977 to 1983 (received the Nobel Peace Prize in 1978).
Joseph Rotblat – physicist and radiobiologist (awarded the Nobel Peace Prize in 1995).
Leonid Hurwicz – economist (winner of the Nobel Prize in Economic Sciences in 2007, awarded "for having laid the foundations of mechanism design theory").

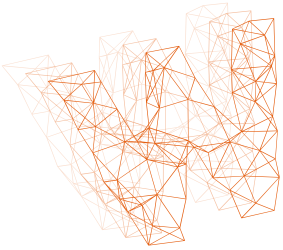
IN THE HEART OF EUROPE

POLAND – ONE OF THE MOST DYNAMICALLY DEVELOPING COUNTRIES NOT ONLY OF EUROPE, BUT OF THE WORLD.

FACTS AND FIGURES

population: **38** million (**7**th largest country in Europe)
area: **312,000** km²
capital: Warsaw (**1.7** million inhabitants, area: **517** km²)
location: Central Europe
membership: European Union, North Atlantic Treaty Organisation (NATO) and others
higher education system: **650** years of academic tradition,
140 public Higher Education Institutions, **1.5** million students

WARSAW – THE ACADEMIC CITY



UW AND MANY MORE

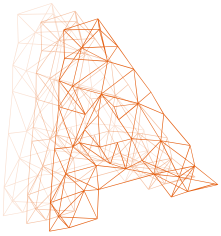
Warsaw has 15 public Higher Education Institutions. Apart from the University of Warsaw, students may choose academies with a more narrow scope of expertise: the medical academy, the polytechnic, the schools of economics or social sciences, the academy of fine arts, theatre or music, the military academy, the sports college or the theological academy. The private education sector has also developed significantly in the recent decades.

CLIMATE FOR CREATIVITY AND INNOVATION

With more than 200,000 people per year getting their academic education here, the capital of Poland has more students than Berlin in Germany or Prague in the Czech Republic. The presence of the academic community in city space favorably influences the character of Warsaw.
The academies provide a focus for creativity, bring together talented specialists and attract foreigners. They create a climate favorable to innovativeness. Initiatives originating in the academic milieu enhance the city's social and cultural life.

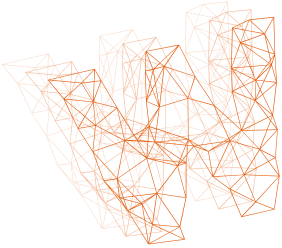
THE LATIN QUARTER

Krakowskie Przedmieście is the most scholarly street of Warsaw, with one of the University's three campuses and the Academy of Fine Arts facing each other across it. Close by is the seat of the Polish Academy of Sciences; right between its building and the University Gate stands the monument to the great Polish scholar Nicolaus Copernicus, the author of the heliocentric model of the universe. The University Library, the Copernicus Science Centre and the Chopin Museum are all close to Krakowskie Przedmieście street.



SEPTEMBER EQUALS SCIENCE

Every year, in the second half of September, Warsaw hosts a week-long Science Festival. The Warsaw Science Festival is the largest science event in Poland and one of the largest in Europe. The event has been organised for over fifteen years. The University of Warsaw has been one of its main organisers



since its inception. Over a thousand scholars from **120** institutions, associations, archives, museums and foundations have been involved in the most recent Festival. The programme, which includes a thousand of various meetings, shows, debates and other events, is addressed to children, young people and the older enthusiasts of science.

WARSAW SCIENCE FESTIVAL – THIS YEAR'S EDITION – 19-28 SEPTEMBER 2014

POLAND – THE RIGHT CHOICE FOR STUDY

SIX CENTURIES OF TRADITION

Academic tradition in Poland goes back 650 years, to the "studium generale", the first Polish university, established in the mid-14th century in Krakow. Poland was the sixth country in Europe to have its own university. The emergence of modern universities in the 19th century brought a breakthrough in the model of higher education in Europe; the University of Warsaw was instituted at that time, in 1816. Nowadays Poland has 140 public Higher Education Institutions. 1.5 million students per year receive their education in Poland. This makes our country one of European leaders, preceded only by Great Britain, Germany and France. The region of Mazovia, of which Warsaw is the capital, belongs to the continent's areas where the largest percentage of young people, over 75%, are students.

A PART OF THE EUROPEAN SYSTEM

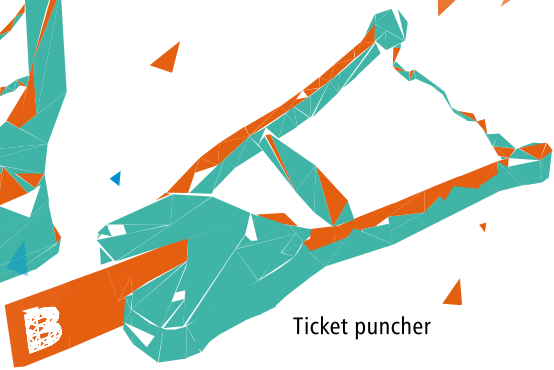
Poland is a member of the European Union and one of states constituting the European Higher Education Area, which goes beyond the borders of EU. The integration of education systems contributed to the increase of student and scholar mobility. To foreigners, Poland's participation in the EHEA means:

- the certainty that education and qualifications gained in Poland will be fully recognised elsewhere, which facilitates employment or continuation of academic career,
- the possibility of continuing a course of study initiated abroad in Poland, or continuing in Poland a course of study initiated abroad,
- the ease of availing themselves of academic exchange programmes, such as the Erasmus+.

MADE IN POLAND

SOME OF THE INVENTIONS YOU PROBABLY DIDN'T KNOW WERE POLISH:

Oil lamp



Ticket puncher

Schedule – thanks to Polish management theoretician, Karol Adamiecki, you know how to manage your time.

Holography – Mieczysław Wolfke was the professor of physics who provided you with the three-dimensional stickers you played with as a kid.

Ticket puncher – before Jan Józef Baranowski invented this piece of equipment, tickets on a bus were punched by a conductor.

Oil lamp – invention of Ignacy Łukasiewicz lighted the lives of people in the 19th century.

Melex – you will find this small electric car in the airports and on golf courses – it is produced in Mielec in the south of Poland.

Artificial bone – thanks to the invention of Polish biochemists, it is possible to supplant natural bone and teeth.

Walkie-talkie – this is not just a toy! The real walkie-talkie was constructed by engineer Henryk Maguski for the US Army.

Windshield wiper – an invention of Józef Hoffman, allowing you to drive safely even in the rain.

EUCYS AT THE UNIVERSITY

FOR THE FIRST TIME, THE FINALS OF THE COMPETITION TAKES PLACE IN POLAND.

FACTS AND FIGURES

26th edition of the competition
118 contestants from **36** countries
84 scientific projects
18 members of the jury
46.5 thousand euro budget for prizes
21 interships or invitation to international science conferences

EUCYS 2014
WARSAW

WHAT IS EUCYS?

– In science, it always helps when you are open not only to knowledge, but also to other people. Talking to people with similar interest helps you avoid mistakes which other people have already committed, or see details which at the first glance looked unimportant – says professor Marcin Pałys, Rector of the University of Warsaw. – EUCYS is a competition which provides such opportunities to young people. This event is a meeting place for people of similar age and with similar scientific drive – he adds.

The European Union Contest for Young Scientists has been around for **25** years. It is organized by the European Commission. The contestants are young scientists who excel in their class, school, country, and finally on the international scene. In order to make it to the final, they first need to convince national juries to their projects.

The **26**th finals of the competition is the first to take place in Poland, in the University of Warsaw in cooperation with Copernicus Science Centre and Polish Children's Fund. Now the decisive stage brought to Warsaw the **118** best young scientists from Europe, Asia and North America. They include mathematicians, computer scientists, ecologists, engineers, economists, biologists, chemists, physicists and representatives of many other fields of science. Some individually, other is groups, they will represent their scientific ideas.

STANDS FULL OF IDEAS

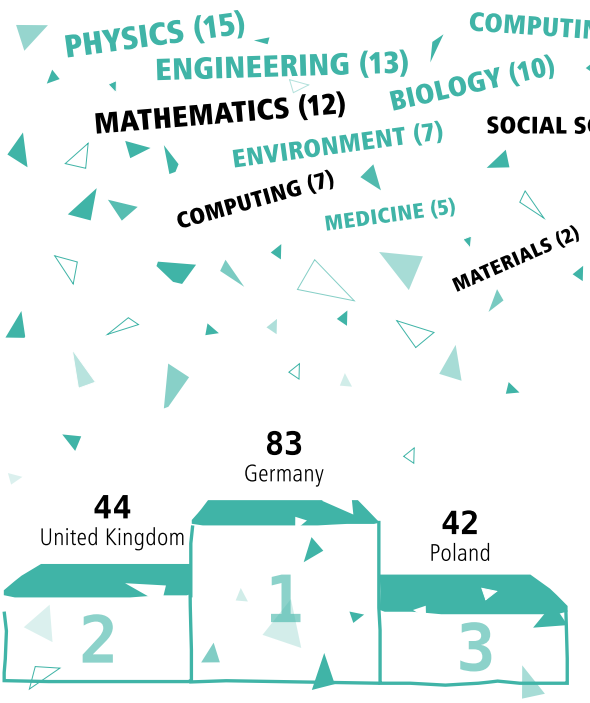
2m² – this is the area available for the contestants to make a scientific presentation. In the University of Warsaw Library there will be as many as **84** of them, a different idea in each. The task of new researchers will be not only to arrange their stands, but – above all – to describe their projects to the jury and the public. The best young scientists will have a chance to win invitations for internships in leading European scientific centres. The winners will also receive money prizes.

CONTESTANTS COME FROM:

Austria, Belarus, Bulgaria, Canada, China, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, New Zealand, Norway, Poland, Portugal, Russia, Slovakia, Slovenia, Spain, South Korea, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, USA

– EU member states
– countries affiliated in the Horizon 2020 programme
– International Cooperation Prize

PROJECTS (84)



RANKING OF COUNTRIES*

10 countries which representatives won the most awards:

Ireland – **35**
Switzerland – **35**
Hungary – **34**
Austria – **33**
France – **32**
Denmark – **26**
Spain – **26**

*Statistics for the years 1989-2013. Not all countries participate in the competition from the beginning. Hungary joined in 1993 and Poland in 1995.

TIMETABLE

This year, during 5 competition days, the participants will face numerous adventures and challenges, not only of intellectual nature. You will have the opportunity to get to know the University of Warsaw, as well as some interesting places connected to Warsaw and its surroundings.

DAY 1. – FRIDAY

Organizational day: registration of participants, checking in at the hotel, setting up competition stands. In the evening there is a trip to Czersk – a mediaeval castle, beautifully located over the Vistula river – where you will have your welcome dinner and see a mediaeval show.

DAY 2. – SATURDAY

Just a few moments for the finishing touches on the stands and you can start the competition! Your work will be observed by the jurors and the spectators. On this day, there will be a chance to meet with the winners from previous editions. After the first round of competition you will relax in a gala dinner and the opening ceremony, taking place in the National Theatre – the oldest existing Polish theatre, established in 1764.

DAY 3. – SUNDAY

It's time for the second and third rounds of the competition! A day full of exciting intellectual adventures. For a start, a lecture of a special guest of this year's edition of EUCYS – Professor Robert Huber, a Nobel laureate in chemistry. After the dinner you will see a special show in the Copernicus Science Centre.

DAY 4. – MONDAY

Jurors will be evaluating your projects for the last time. After the disassembly of the stands, you will have a fascinating walk with a Warsaw tour guide around the Old Town. Interesting history and unique atmosphere of the place will certainly make you want to come back.

DAY 5. – TUESDAY

On Tuesday you will learn the names of the winners of this year's edition of EUCYS! The official pronouncement of the results and awarding of prizes will take place in the biggest hall of the University – Auditorium Maximum. The day will end with a farewell dinner and a reception in the National Stadium, which was built before the 2012 UEFA European Championship (Euro 2012).

26th EUCYS
19-24 September 2014

Would you like to know more about Warsaw? Take a peek at the cover and start a fantastic tour!

YOUNG SCIENTIST'S HANDBOOK

We asked professor Jan Madey, EUCYS 2014 Chairman of the Organizing Committee, to finish the sentences:

A SCIENTIST IS...

a person who is curious about the world, looks for solutions of various problem both of practical and theoretical nature. Full of passion. A scientist should above all be humble, as in the scientific research you mostly meet failure, and success is achieved very rarely.

AND A YOUNG SCIENTIST...

has a passion for learning, searching, is interested with the world, and at the same time lacks experience, which allows to analyse problems totally out of the box. This view allows the young scientists to find an unexpected, surprising solution. Not knowing that the problem is "unsolvable", the young scientist studies it and… finds a solution :)

EUCYS...

is a proof that young people are not afraid of science, especially difficult science. The competition opens the door to the world. Quite often the winners find internships, possibility to participate in Nobel Prize awarding ceremony, contact with experienced scientists mtuch more fascinating than financial prizes. The contestants start to believe that they can make a name for themselves in science.

FOUR PIECES OF ADVICE FOR YOUNG SCIENTISTS...

1

Firstly, don't depend only on your talent. The talent helps a lot, but is not enough to achieve success.

2

Secondly, remember the analogy between sport and science – a scientist trains by mental workout.

3

Thirdly, remember that science is interdisciplinary.

4

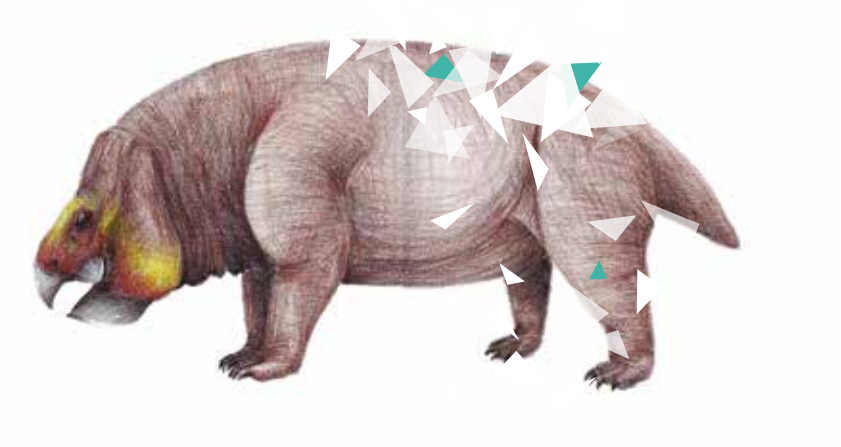
Fourthly, a young scientist should shape in himself an ability to critically evaluate models and standards.

PROFESSOR JAN MADEY:

- Chairman of the Polish Children's Fund,
- He defended his master's thesis before his **22**nd birthday,
- In the 1960s participated in the installation of the first computer at the University of Warsaw,
- One of the founding fathers of Polish computer science,
- for the last **20** years the scientific mentor of students who successfully compete in ACM International Collegiate Programming Contest,
- has favourite memorization techniques, one of them is replacement of abstract digits with tangible designates, e.g. **1** = a tie.

EUCYS – FIRST STEP ON THE SCIENTIFIC LADDER

They were the laureates of the EUCYS competition; now, regardless of whether they study the footprints of dinosaurs or paths in tree-graphs, they climb the scientific ladder in the University of Warsaw.



PALAEONTOLOGY

Grzegorz Niedźwiedzki, Ph.D., EUCYS 2000, Amsterdam, 1st prize
graduated and completed his Ph.D. in the University of Warsaw, he works in the Evolutionary Biology Centre in the University of Uppsala, Sweden

He applied for the competition with a project on dinosaur footprints. Today, he conducts paleobiological studies on the early quadruples from the Devonian period, and learns the evolution and biology of several Triassic groups of animals, which remains were discovered in Poland. – I perform excavations in various parts of the world – says dr. Niedźwiedzki. – When the excavation season ends, it's mainly desk work in the preparatory lab: cleaning and describing the findings. The final stage is the preparation of a scientific paper.

MATHEMATICS

Magdalena Bojarska, EUCYS 2008, Kopenhagen, 1st prize
studies at the University of Warsaw

In her paper Hamiltonian cycles in generalized Halin graph she proved that the Halin graphs have cycles (paths that pass each edge only once) and prepared an algorithm allowing for quick finding of a cycle, in other words – she found a method to e.g. find the shortest way "there and back" in

the Halin graph. – One of the most gratifying things in the competition was the review of my work, which I received after the publication of the results of qualifications, written by professor Tomasz Łuczak, an extraordinary mathematician – says Magdalena Bojarska.
In the future she would like to concentrate on issues from the border of mathematics and computer science.

PALEONTOLOGY

Justyna Słowiak, EUCYS 2010, Lisbon, 2nd prize
studies at the University of Warsaw

In the competition she presented the project Biodiversity, Palaeoecology And Taxonomical Position Of Vertebrates In The Middle Triassic Sea Ecosystem In Silesia (sw Poland).
Today, Justyna Słowiak is in the course of writing her master's thesis in which she will try to reconstruct the limbs of Protoceratops, a herbivore. Its remains are found in Mongolia. – I draw and describe its prepared fossilized bones. However, they are always incomplete, so basing on the data from other skeletons from this animal's region I prepare reconstructions – she says.
Justyna Słowiak plans to do a BSc. in geology. Later, she plans to become a Master of Science in biology and geology, still working on the dinosaurs.

PHYSICS

Aleksander Kubica, EUCYS 2009, Paris, 1st prize and honorary prize
studied at the University of Warsaw, now a Ph.D. candidate in the California Institute of Technology, USA

Aleksander Kubica took part in the competition jointly with his colleague, Wiktor Pilewski, and a project Spiral Zone Plates. – This victory allowed us to take part in the Nobel Prize awarding ceremony in 2009, which was an unforgettable experience – Kubica says.
After completing his Bachelor degree in mathematics and physics in the University of Warsaw, he started doctoral studies in quantum physics at the CalTech. – I'm trying to understand how one could build a quantum computer and what advantages we could have from this technology. For the last several months I worked on quantum codes, i.e. coding quantum information in such a way that would prevent losing the information stored – he says.

BIOLOGY

Dominik Cysewski, EUCYS 2007, Valencia, special prize
graduated from the University of Warsaw, Ph.D. candidate in the Polish Academy of Sciences

During the competition he co-authored (with his colleague, Paweł Gniewek) a project Bi-functional cross-linking reagents as a means of establishing spatial protein structure. The prize was an internship in the National Biotechnology Centre in Madrid. – I believe that competitions requiring creativity at work, such as EUCYS, have a better impact on the development of young people than competition of imitative character – affirms Dominik Cysewski.
Today, he concentrates on the studies in proteomics with the use of mass spectrometry. – They concentrate on the quantitative analysis of protein systems engaged in the RNA metabolism and cross-linking – says Cysewski.

BRAIN GYM

THE BRAIN AND ITS CAPABILITIES MAY BE COMPARED TO THE FUNCTIONING OF MUSCLES IN YOUR BODY

– in order to develop and nurture its potential at the highest level, you need to provide a daily portion of workout.

THE NEXT 5 PAGES INCLUDE:

6 pieces of advice of University experts on psychology of learning and memory,
2 exercises which will let you activate your brain,
12 crossword questions related to the University.

PRACTICE MAKES THE MASTER

For many years, psychologists have been looking for an answer to the question: to what extent our abilities are inborn or learnable? It seems that the closest to the truth is the statement that everybody is born with some intellectual potential which sets the limit for our capabilities. However, to fully use this potential one needs practice and constant development.

DON'T TAKE SHORTCUTS

Everyday life provides many opportunities to train your brain. Sometimes it pays not to take shortcuts, but make an effort. You can also practice during your shopping – trying to calculate the result in your memory, and solve Sudoku on the bus.

PRACTICE AFTER DARK

When do we best take the knowledge in? Long-term memory works best in late afternoon and evening hours. It is then better to learn in the afternoon, but not during the nights, as after a serious portion of learning you need to give your brain a rest. During sleep, your brain consolidates memories, in other words – records new information.

ATTENTION! CLEAN YOUR DESK!

One of the basic factors without which the acquisition of knowledge becomes very difficult, or even impossible, is the ability to focus. Remember that unnecessary items in our surroundings may weaken our concentration – so it is better to clean up the mess before you start to learn.

NATURAL MOBILIZATION

If you feel stressed before you take part in a competition – it's good news. We need stress. Feeling stressed is a signal of mobilization of your organism before an important event (positive stress, eustress). The problem appears only when the level of agitation is too high and prevents us from performing a task (negative stress, dystress).

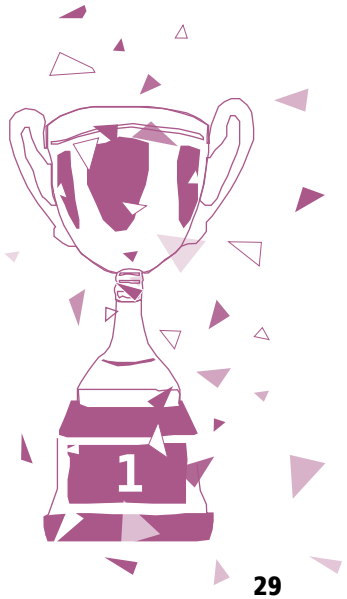
DRESS REHEARSAL

How do you get rid of negative stress? Without earlier practice it is virtually impossible. That is why it pays to prepare yourself for each important event. Relaxation techniques come in handy here – you may use them just before the show.

Before the presentation of an important project you should present it several times in front of your friends, for example. You can also use the imagination trainings – practice the whole presentation, or even the whole day, in your head.

PLANNING IN ADVANCE

Another important thing in averting your stress is the preparation of all important things in advance – both related to the presentation (like notes, scientific instruments) as well as trivial, such as clothes or means of transport.



Advice on brain practicing and managing your negative stress were prepared by professor Ewa Czerniawska and doctor Jerzy Wojciechowski, experts on the psychology of learning and memory in the Faculty of Psychology of the University of Warsaw.

A MOMENT FOR A QUIZ

If you can spare a moment and have a pen at hand, that's good. We have prepared for you two tasks. The solutions are on the back cover.

FACULTY NEXT TO A FACULTY

On the main campus of the University of Warsaw there are several faculties representing humanities and social sciences. Try to match the buildings to individual faculties, using the following hints:

- between the Faculty of Law and Administration and the Faculty of Geography and Regional Studies stands only one building.
- the Faculty of Geography and Regional Studies is located next to the building of the Faculty of Polish Studies.
- The Faculty of Polish Studies is not located next to the Faculty of History, and the Faculty of Oriental Studies is not adjacent to the Faculty of Polish Studies.

Note: all faculties mentioned here are located in the main campus, but not necessarily in the sequence provided in the solution :)

MEMORY FOR DATES?

Try to memorize as many dates as possible from the history of the University. After several minutes cover the left side of the page and on the right side in the empty column put in dates which you managed to memorize.

1872 A balloon with a crew of four started from the main campus. The balloon landed after travelling almost 100 km. The flight was planned by the then Mathematical and Natural Science Faculty.

1938 Opening of the meteorological and astronomical observatory on the Pop Ivan mountain in Ukraine as the branch of the Observatory of the University of Warsaw.

1818 This was the year of the first inauguration of an academic year in the University of Warsaw.

1974 On this year, a ship was launched under the flag of the University of Warsaw to roam the high seas.

1643 Before this year the Kazimierzowski Palace was finished – the seat of our Rector.

1999 The launch of a new University Library. This is where the EUCYS final takes place.

1921 The first honoris causa doctorate was awarded.

1932 Establishment of the Institute of Oriental Studies, transformed into Faculty in 2008.

1911 A new gate was built at the entrance of the University.

2007 The revitalization process of the historical campus at Krakowskie Przedmieście was completed, returning old magnificence to 11 historical buildings.

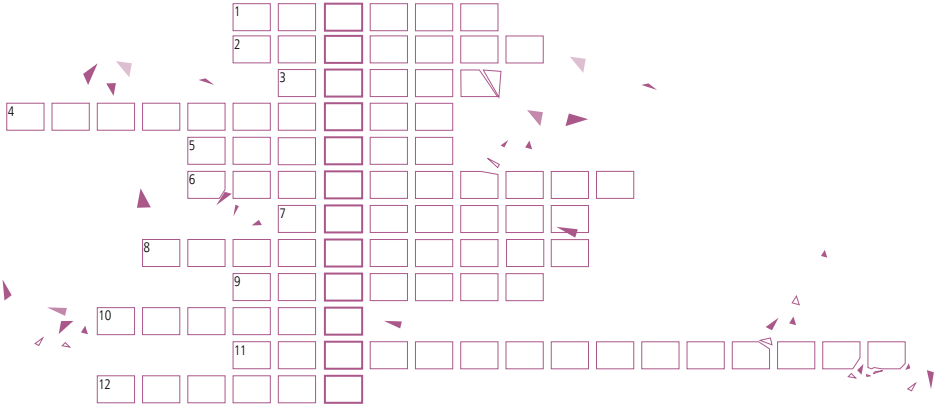
Right date = 2 point, date with minor error = 1 point

If you scored over **8** points – your memory works really well.
If you scored over **10** points – you have no problems with memorizing.
If you scored below **8** points – don't worry, just practice every day :)

THE WORD CROSSING

The solution of this crossword is the answer to the question: which statues stand in the niches of the University gate?

1. Students believe that if they touch his hand, they will have no problem with passing all the exams. "Eternal student" sits on a bench in front of the old University Library in the University of Warsaw campus. What is his name?
2. The calendar page with this month on it means for students the end of holiday and return to the study hall. On the 1st day of this month the University of Warsaw holds an official inauguration, starting with a march in togas from the Kazimierzowski Palace to Auditorium Maximum.
3. It has, in some regions, up to 300 cloudless nights a year. That is why University telescopes are set up there, to allow the astronomers to conduct large-scale inspections of the sky. Which country is that?
4. Here you can meet the European bison, the biggest land mammal in Europe. It is one of the oldest national parks of Europe, included in the UNESCO World Heritage list. On the verge of it is a geobotanic station of the Faculty of Biology of the University of Warsaw.
5. At the moment of its founding, the University of Warsaw had five faculties – thus five stars around the eagle on its emblem. With time, this number grew. How many of them are there today?
6. An obligatory point on the agenda for every tourist visiting Warsaw. The most representational route of the city, connecting two former royal residences: the Royal Castle in the Old Town and the Wilanów Palace; one of its parts is Krakowskie Przedmieście, the street where the University campus is located.
7. University of Warsaw graduate, economist, winner of the Nobel Prize in Economic Sciences in 2007, awarded "for having laid the foundations of mechanism design theory".
8. He stopped the Earth and moved the Sun. A Polish astronomer, "resting" on a pedestal on the Krakowskie Przedmieście; you will pass him by when strolling from the University Gate south, towards the Polish Academy of Sciences.
9. Thanks to this program you may, by studying in one of 33 European countries, come for a semester or for a year to the University of Warsaw to study. Its participants are very keen to choose Poland, as proved by the statistics – our country is 7th on the list of most popular destinations.
10. If you will sit on a stone bench in front of Kazimierzowski Palace in the University campus, you will hear his Waltz in e-minor. In his youth, together with his family he lived in the University, he finished the Main School of Music, which in the beginning of the 19th century belonged to the University. You will find 14 more benches in his name in Warsaw.
11. If you love science, you need to visit Warsaw in September. This is when one of the biggest European science popularisation events takes place here. This year the event will grow of age, as it will be the 18th edition. The University of Warsaw is behind the idea and organization of the event.
12. The University, during 200 years of its existence, grew into the very fabric of Warsaw. It is difficult to find a district of the city without our presence. Most of the buildings are located in one of three campuses. One of them groups faculties and research centres of exact sciences. What is its name?



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M. Giersz: 10 (right)

M. Brice (CERN): 11 (left)

J. Słowiak: 26

PUZZLE SOLUTIONS

PAGE 30

Faculty next to a faculty
1. Faculty of Oriental Studies
2. Faculty of History
3. Faculty of Geography and Regional Studies
4. Faculty of Polish Studies
5. Faculty of Law and Administration

Note: There may be more than one correct answer!

PAGE 32

The word crossing
The solution:
ATHENA URANIA
Correct answers:
1. SŁAWEK
2. OCTOBER
3. CHILE
4. BIAŁOWIEŻA
5. TWENTY
6. ROYAL ROUTE
7. HURWICZ
8. COPERNICUS
9. ERASMUS
10. CHOPIN
11. SCIENCE FESTIVAL
12. OCHOTA

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