



University of Science  
and Technology



Research  
Institutes



Valley of Science  
and Technology

## | General News

### Zewail City Ranked First Among Egyptian Universities According to Times Higher Education Ranking for Arab Universities



Times Higher Education has just ranked Zewail City the first among Egyptian universities, and the tenth among more than 155 universities in the Arab world. Zewail City's advanced rank is due to the exceptional scientific research output performed by the City's capable scientists, evident by the number of high-quality international publications and the citations of the City's work in the international arena. Also, the large research funds secured by our capable scientists have largely contributed to this advanced ranking. Furthermore, this ranking highlighted the exceptional teaching environment Zewail City provides for its undergraduate and postgraduate students in the different engineering and science disciplines the City offers. This remarkable achievement was the result of hard work and dedication of the City's capable faculty members, research scientists, students, and administrative staff who all worked with a sincere team spirit to bring the dream of the founder Dr. Ahmed Zewail to reality.

### Dr. Ahmed Abdelsamee Appointed as the Director of the Academic Advising Unit



The University of Science and Technology (UST) at Zewail City appointed Dr. Ahmed Abdelsamee as the Director of the Academic Advising Unit (AAU). Dr. Abdelsamee is an Associate Professor in the Engineering Mathematics Program at UST. His research interests include EM-based optimization methods, RF and microwave CAD tools, design centering and yield optimization techniques, fractional calculus, and quantum computing. The main task of the AAU is to guide students in meeting their graduation requirements successfully and help them

overcome the challenges they may face during their academic journey at UST.

[More about Dr. Ahmed Abdelsamee](#)

## Dr. Tamer Ashour Appointed as the Director of the UST Accreditation Unit



Zewail City's University of Science and Technology (UST) appointed Dr. Tamer Ashour as the Director of the UST Accreditation Unit. Dr. Ashour is an Associate Professor in the Communications and Information Engineering Program. He earned his Ph.D. degree in Electrical and Computer Engineering from Rice University in the United States. The main role of the Accreditation Unit (AU) is to coordinate the Academic Accreditation affairs along with managing the Learning Technologies Services activities. The AU plays a pivotal role in the application of several UST academic programs for ABET accreditation.

[More about Dr. Tamer Ashour](#)

## Zewail City Researchers File New Patent



The Zewail City Valley of Science and Technology's Intellectual Property & Technology Transfer (IPTT) management unit with support from TICO-Zewail City filed a new patent application for an invention by Dr. Salem Hegazy, Dr. Mohammed Zidan, Dr. Mahmoud AbdelAty, and Dr. Salah Obayya. The patent application was submitted to the Egyptian Patent Office on May 04, 2021. The application was filed under the title "Quantum Random Access Memory" (QRAM) which is an indispensable element of computers that are based on the foundations of quantum mechanics and offer the so-called quantum supremacy in solving several computing problems.

### | Events

## Graduate Student Afnan Hassan Defends her M.Sc. Thesis in the Biomedical Sciences Program



Under the supervision of Dr. Reem Arafa, Professor of Biomedical Sciences at Zewail City's University of Science and Technology and Director of the Brain Design and Discovery Lab, the

University of Science and Technology and Director of the Drug Design and Discovery Lab, the M.Sc. student Afnan Hassan defended her M.Sc. thesis entitled "Identification of Potential SARS-COV-2 (causative of Covid-19) Inhibitors by in Silico Comprehensive Virtual Screening, Pharmacophore Modeling, and Molecular Dynamics" on June 30, 2021. Afnan Hassan is among the first cohort to graduate from Zewail City's Biomedical Sciences Program with Drug Design and Development concentration (class 2018).

## | Faculty News

### Dr. Mahmoud Moharam Collaborates on a Research Project Funded by the US Department of Energy



Dr. Mahmoud Taha Moharam, Assistant Professor in the Environmental Engineering Program at Zewail City's University of Science and Technology, is a Co-Investigator in an international research team who earned an 800,000 USD grant from the United States Department of Energy. This research project aims to experimentally and computationally investigate thermal hydraulics and safety systems in very high-temperature reactors which are nominated as the potential design for the fourth generation of nuclear reactors. This project will last for three years and will be led by Prof. Muthanna Al-Dahhan from the Missouri University of Science and Technology in the United States.

[More about Dr. Mahmoud Moharam](#)

### Dr. Eman Badr Joins Scientific Innovation Committee for "Talents in Arabic" Festival

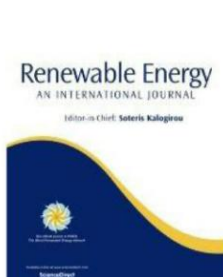


Dr. Eman Badr, Assistant Professor in the Biomedical Sciences Program at Zewail City's University of Science and Technology, has been selected as a member of the Scientific Innovation Committee for the "Talents in Arabic" festival. The festival is organized by the Ministry of Youth and Sports for the first time to discover young talents from the age of 8-17. The festival covers all fields such as art, science, literacy, and sports.

[More about Dr. Eman Badr](#)

## | Research News

### Zewail City Researchers Publish a New Paper in the Journal of "Renewable Energy"



Dr. Ibrahim Ismail and Dr. Tamer Samir, Professor and director of the Environmental Engineering Program, continued their work on the newly reported catalyst (magnetized ZIF-8 impregnated with sodium hydroxide) for producing high-quality biodiesel. In their recent publication, a new improvement of the catalyst to enhance its reusability was reported. Moreover, optimized methanolysis reaction on the new catalyst showed about 100% conversion. Finally, the properties of the produced biodiesel matched the ASTM ranges. This study has just been published in the Journal of "Renewable Energy".

[More about Dr. Ibrahim Ismail](#)

[More about Dr. Tamer Samir](#)

[More about the paper](#)

## New Paper in Antibiotics Journal Being Published by Zewail City Research Group



*antibiotics*

Dr. El-Shibiny, Professor in the Biomedical Sciences Program in Zewail City, and his research group published a new research paper titled "The Synergistic Effect of Biosynthesized Silver Nanoparticles and Phage ZCSE2 as a Novel Approach to Combat Multidrug-Resistant Salmonella enterica" in Antibiotics journal. The study provided a novel approach by using a combination of phage and nanoparticles as an alternative to antibiotics to get the maximum synergistic effect to control pathogenic bacteria.

[More about Dr. El-Shibiny](#)

[To access the paper](#)

## Zewail City Researchers Publish a New Paper on the Development of a Diagnostic Tool of Foot and Mouth Disease



Dr. Rabeay Younes, Associate Professor in Nanoscience Program, and Dr. Ibrahim Elsherbiny, Professor and Director of Nanoscience Program, in collaboration with other researchers have published a new research paper on the development of a diagnostic tool for foot and mouth disease in the journal of "Biosensors and Bioelectronics". Foot and mouth disease (FMD) is a severe, highly contagious viral disease of livestock that has significant economic implications. The paper discusses the early recognition and real-time monitoring of Foot-and-mouth disease virus (FMDV-SAT-2) in clinical samples. The researchers have developed a new VIP-electrochemical sensing platform. On gold-copper functionalized screen-printed electrodes, imprinting of the SAT-2 is assisted by the formation of SAT-2-poly(o-phenylenediamine). Thus, on-site point of care diagnostics for SAT-2 virus are provided. This work contributes towards achieving the UN Sustainable Development Goals especially goal 2 "Zero Hunger".

[More about Dr. Rabeay Younes](#)

[More about Dr. Ibrahim Elsherbiny](#)

[To access the paper](#)



## Zewail City Researchers Publish a New Study in the Transboundary and Emerging Diseases Journal



Through collaboration between the Microbial genomics research group led by Dr. Mohamed Elhadidy, a Professor in Zewail City's Biomedical Sciences Program, and Zewail City's Center for Genomics a new study was published in the Transboundary and Emerging Diseases journal. In this study, microbial comparative genomics was applied to characterize *Campylobacter jejuni* (food-borne bacterial pathogen) obtained from different food sources and estimate the relative contribution of different potential sources of infection of this bacterium in Egypt.

*Campylobacter* is considered to be the most common bacterial cause of human gastroenteritis in the world. The most common clinical symptoms of *Campylobacter* infections include diarrhea, abdominal pain, fever, headache, nausea, and/or vomiting.

This study supports the capability of gene-by-gene subtyping methods in identifying genotypic subtypes of *Campylobacter jejuni* for genomic surveillance-based investigations. Furthermore, this multidisciplinary study takes a One Health approach that greatly improves the identification of transmission dynamics, enabling comparative genomic surveillance to assist academics, food producers, and public health partners to control *Campylobacter* in Egypt.

[More about Dr. Mohamed Elhadidy](#)

[To access the article](#)

### Monthly Highlights

#### | University of Science & Technology (UST)

UST has 9 undergraduate academic programs: 5 engineering majors and 4 science majors, along with 13 graduate programs: 7 M.Sc. and 6 Ph.Ds. This month we highlight the Aerospace Engineering Program

##### **Aerospace Engineering Program**

The Aerospace Engineering major is a five-year program aimed at providing future graduates with the ability to fulfill engineering tasks associated with air and space travel. The emphasis is on multidisciplinary education and the student is exposed to a range of topics covering basic math, physics and mechanics, engineering structures, fluid mechanics and aerodynamics, control engineering, and robotics and propulsion. Additional courses on sensors, electronics, software, and system engineering provide the student with a well-rounded approach to engineering. The graduate would thus have the reach and flexibility to start a career in the air transport or space industries or associated research centers. The program strongly emphasizes hands-on design experience and innovation.

#### | Research Institutes (RI)

The Research Institutes at Zewail City produce research that touches the daily lives of Egyptians through solving inherent and prevailing problems in several areas, such as health, technology, energy, and water. This will ultimately create sustainable development through industries built on the outputs of scientific research. This month we highlight the Center for Photonics and Smart Materials (CPSM).

##### **Center for Photonics and Smart Materials (CPSM)**

The center's mission is to carry out world-class research in nanophotonics, enrich the research culture in Egypt and bring innovative solutions to societal problems.

The CPSM aims to ensure that our research is at the forefront of nanophotonics using cutting-edge technologies in the field. Disseminate our research results internationally via publications in the best international journals and conferences. Equip our undergraduate and postgraduate students with state-of-the-art knowledge in nanophotonics.

#### | Valley of Science and Technology

The mission of VST is to ensure that Zewail City research outcomes are being protected and utilized into industrial products and services needed by society and the local market in the first place and then the foreign markets. The VST is a multiple-unit component and program of Zewail City. This month's highlight is: the VST Internship Program (VST Ambassadors)

##### **VST Internship Program (VST Ambassadors)**

The program aims to develop the skills and experiences of the interns (ZC students) in many areas of innovation, management, entrepreneurship, intellectual property management and technology transfer, which qualifies them to enter the labor market professionally. The program seeks to prepare competencies that can make innovative and creative domestic projects, and this is done under the supervision of a number of professors, researchers, and experts in the fields of entrepreneurship, innovation, and business development.