



## Annual Report

### FACULTY of SCIENCE

#### I. REFLECTION

Despite the never-ending challenges of the academic year 2019-2020, the Faculty of Science is committed to fulfill its mission, by providing high quality education and research centered on fundamental and applied sciences. The rapid closing-off of face-to-face educational work, in response to the Covid-19 pandemic, imposed a quick transition to remote teaching and learning. Several platforms have been adopted by the Faculty to ensure the best academic follow up with students and minimize the disruption to their learning.

#### II. TEACHING & LEARNING

While the growing COVID-19 pandemic closed down universities, teaching in the Faculty underwent a transition to **remote teaching and learning** during the spring semester. Several platforms have been adopted by the Faculty to ensure academic follow up with students and minimize the disruption to their learning.

Among them are: **ZOOM**, a remote conferencing service that help instructors to act as virtual classrooms; **MOODLE**, a course management system that links the instructor with the students and enriches their learning experience by providing them a place to retrieve course information, submit assignments, share information, interact through discussions and sit for online exams; **BBB (BigBlueButton)**, open source web conferencing system that allows the instructor to give online lectures; and **Offline recorded PowerPoint Presentations** through voiceover recordings.

#### III. HIGHLIGHTS

- The Faculty has published more than 100 peer-reviewed articles in international journal (96 Publications in 2020 and 84 publications in 2019, all published in Scopus Indexed Journals).
- The Faculty hosted the **Lebanese Collegiate Programming Competition (LCPC)** under the patronage of the Minister of Telecommunications, Mr. Mohammad Choucair, on October 4, 2019 at BAU Debbieh Campus. The competition is the first stage of three stages held annually, followed by the second stage at the regional Arab African (ACPC) level, and then the third stage, which is the International Collegiate Programming Contest (ICPC), held this year in Moscow. Organized since 2009, this competition aims to raise students' competence in programming and problem solving,



as well as attract companies seeking to employ competitors in the field of Programming. LAU and AUB teams won first and second place and BAU won sixth place, out of thirty-seven teams from different Lebanese universities, and third place at the level of Lebanese universities. Two computer science teams from the Faculty of Science were qualified to participate in the Africa and Arab Collegiate Programming Championship (ACPC), which took place at the end of November in Sharm El-Sheikh, Egypt.

- The Faculty has received, on October 24<sup>th</sup>, 2019 a grant from the Institute of Research for Development (IRD), France to co-fund **the project “International Post Graduate Studies in Environmental Management and Sustainability for Mediterranean Countries)” (ENVIPRO-Med)**. This project is designed to develop a Joint Postgraduate Master's program between the Faculty of Science, Department of Biological Sciences at BAU and the Master “Ingénierie en Écologie et Gestion de la Biodiversité” (IEGB) of Montpellier University, France with partnership of the Environmental Observatory O-Life, Ministry of Environment of Lebanon, the Research Center for Environment and Development at BAU and ECO-MED, France. It aims at improving environmental education and capacities of Lebanon and the region to address the severity and complexity of current environmental challenges. The project highly emphasizes cooperation with industry and employers, local authorities and both governmental and non-governmental institutions and organizations to enhance innovation potential and employability of graduates. It also addresses issues of transboundary concern in the Mediterranean Basin and build regional cooperation between Lebanon and France.
- The Faculty offered senior high schools students of Bahaa Hariri School on February 5<sup>th</sup>, 2020 a **visit to the Faculty Physics’ Laboratories**, providing them with an enriching practical experience, using a hands-on approach that complement their classroom learning while giving them a first-hand look at University life. Students were also offered a unique opportunity for astronomical observations at BAU Observatory located at Debbieh Campus.
- The Faculty offered 75 high school students from the schools of Al Makassed Philanthropic Islamic Association of Beirut, namely, Khaled Bin Walid School, Omar Bin Al Khattab School and Ali Bin Abi Taleb School, along with members of Makassed parents committee, on February 8, 2020 a **visit to the Faculty’ Laboratories**, to experience what it would be like to be a student at BAU and to explore the University life. It gave students a clear perspective of what is ahead, along with a strong overview of academic expectations, so they will be better prepared to meet the challenges of university life and make the right choices.
- The Faculty provided **academic expertise and services** to communities, businesses, Municipalities. The Specialized Water and Soil Analysis Laboratory conducted 78 tests for municipalities, research students and companies during academic year



2019/2020. The Applied Statistics Center, that serves BAU and non BAU communities, performed 33 data statistical analysis during this year.

#### IV. ACHIEVERS

- Faculty's Dean, Prof. Ramadan Awad, was nominated as a co-organizer and a chair of a session titled: "Permanent Magnets: Materials and Their Applications" at the **7th International Conference on Superconductivity and Magnetism- ICSM2020** which was supposed to be held between 19th and 25th of April 2020 in Bodrum, Turkey, but due to COVID19 pandemic, the conference was postponed to April 2021. ICSM has become a prominent platform, accepting around one thousand contributions from internationally recognized reputable research institutions in over 60 countries.
- Dr. Mohammed Salem from the Physics Department participated in "**2nd AUBMC Theranostics Conference**" organized by the Continuing Medical Education office in collaboration with the Division of Nuclear Medicine, PET/CT and Cyclotron Facilities, Department of Diagnostic Radiology at AUBMC, and endorsed by the International Atomic Energy Agency (IAEA), Arab Society of Nuclear Medicine (ARSNM), Lebanese Atomic Energy Commission (LAEC), and the Lebanese Society of Nuclear Medicine (LSNM) on September 6-7, 2019.
- Faculty's assistant Dean, Dr. Ghada Khawaja, participated in the "**Dardasha Talks**" event, which is an initiative by the Dynamic Actions for Women in Research and Knowledge observatory (DAWREK'N). The event, held in Beirut campus on October 16, 2019, aimed at highlighting the academic potential of female researchers in Lebanon and to discuss the latest scientific discoveries they have achieved. Dr. Khawaja's talk entitled "رزق الديار بطول الاعمار" focused on how Indole-3-Carbinol, a natural ingredient found at high levels in cruciferous vegetables, could represent a novel therapeutic agent in the treatment of Rheumatoid arthritis and might be also useful for other autoimmune and inflammatory diseases. A Study Published in BMC Complementary and Alternative Medicine Journal 2018: 18(1):337 (Q1 journal).
- Faculty' students, Leila Farhat and Mariam Rabaa, participated in the **12th Annual Conference of the Arab Forum for Environment and Development (AFED)** which was held on November 14th & 15<sup>th</sup> 2019 at Bristol hotel, Beirut. The conference hosted delegates representing governments, regional and international organizations, the private sector, academics and students. AFED 2019 aimed to survey the current situation of the formal environmental education in the Arab countries, to map existing programs in Arab schools and universities, and to identify gaps that need to be bridged and success stories that others could benefit from in the region. Students from several universities in Lebanon and the Arab region participated in the Future Environment Leaders Forum (FELF) to propose solutions



and plan actions. Our students drew attention because of their high-level debating skills and were interviewed by Radio Monte Carlo Doualiya.

- Dr. Walid Malaeb from the Physics Department attended with a group of BAU students, a lecture at the American University of Beirut (AUB) on February 13, 2020 entitled “Advances in spin-torque oscillators” by Dr. Mohammad Haidar.
- Dr. Noura Yassine, associate professor of applied mathematics, participated in the “International Conference on Operations Research and Enterprise Systems (ICORES) “, a conference indexed in Scopus, which was held on February 22 – 24, 2020 in Valletta, Malta.
- Dr. Seifedine El Kadry gave three workshops on the use of MOODLE for all BAU Faculties.
- For the third year in a row, Dr. Walid Malaeb from the Department of Physics was appointed by the Embassy of Japan in Lebanon as a member of the jury that selects students who receive the Japanese government scholarship for year 2021 (August, 2020).
- Several Faculty members have been promoted during 2019-2020; Dr. Jamilah Borjac, has been promoted to Associate Professor of Biochemistry, Dr. Maher Jneid to Associate Professor of Pure Mathematics, Dr. Abdallah El Chakik to Associate Professor of Image & Signal Processing, Dr. Mohammed Salem to full Professor of Radiation Protection and Dr. Seifedine Al Kadry to full Professor of Applied Statistics.
- Within the framework of collaboration with the Khleif Lab at Georgetown University, Faculty’s Master Student, Farouk al Kaakour, undertook 6-months **research internship at Lombardi Comprehensive Cancer Center, Georgetown University Medical Center** and successfully accomplished and completed his thesis project in cancer immunotherapy field under the co-supervision of Dr. Ghada Khawaja from BAU and Dr. Viveck Verma from Georgetown University.
- Outstanding Faculty’ students extended their **senior projects to an international level** where they published their work in a highly indexed journals. The senior chemist Malak El Sayyed focused on the corrosion inhibitors and published an article in the Journal of Failure Analysis and Prevention. Senior physicist Alaa Mohammad Abdallah and Jamal Hisham Al Boukhari also published two articles each in materials science journals: Modern Applied Science, Journal of Superconductivity and Novel Magnetism, and Chemical Physics journal under the supervision of Prof. Ramadan Awad, Professor of Materials Science and Dean of the Faculty of Science.
- When the COVID-19 pandemic hit the spring semester, Senior Biology students whose academic year had already been radically transformed tackled the **recent**



**findings in COVID19** in their senior projects: Epidemiology, SARS-Cov2 viral structure, viral genome, non-structural and structural proteins, viral replication: focusing on viral entry, attachment to ACE-2 receptor on host cell, viral pathogenesis and immunopathophysiology, vaccine research development and potential antiviral drug candidates- current status.

## V. COLLABORATION

- The Faculty signed three-year cooperation agreement with **Tripoli Governmental Hospital** on December 24<sup>th</sup>, 2019. This agreement aims to utilize the hospital's human and scientific potentials and capabilities, to train Medical Physics Masters students on how to use diagnostic imaging, radiation therapy and other devices at the hospital to benefit students in applied and research practices. In addition to organizing sustainable educational training courses, scientific seminars, and workshops, as well as conducting joint research and studies in the field of medical physics, approved by both the Faculty of Science and the hospital.
- The Faculty is maintaining its international collaboration with the **Medical Physics Department at CancerCare Manitoba (CCMB)-Canada**, to provide intensive clinical trainings in the different subfields of medical physics, research collaboration and co-supervision of Postgraduate Students enrolled in MS Medical Physics' program.
- The Faculty maintained its national collaborations with several renowned companies and industries to provide BAU' science students and fresh Graduates with training placements during 2019/2020, building their capacity and improving their professional skills: **INOVIE Laboratories, ICC group (International Computer & Communication Systems – Lebanon), Mount Lebanon Hospital, Beesline Apitherapy, Arwan Pharmaceuticals, Serum Product Groups and Tinol Paints.**