



جامعة العلوم والتقنية في الفجيرة
UNIVERSITY OF SCIENCE & TECHNOLOGY OF FUJAIRAH



Research Strategy

2021 - 2022

USTF Research Strategy

University of Science and Technology of Fujairah (USTF) places strong emphasis on research and scholarly activities of faculty, teaching assistants, and students. In fact, research is one of the main criteria for recruitment and promotion of faculty members. Goal 2 of USTF Strategic Plan 2018-2023 reflects the importance of research to USTF community. As a new proactive university, USTF aligns its research efforts with the UAE Vision 2021 in addressing global problems of national impacts. USTF has established the Office of Development Sustainability as a component of its organization structure to face global challenges such as increasing population and depletion of natural resources.

Commitment to USTF Research Goal

The following are some of the actions taken by the University towards realizing research goals and objectives of USTF Strategic Plan 2018-2023:

- 1. Participating in National Research Activities:** In cooperation with the UAE Telecommunication and Digital Government Regulatory Authority (TDRA), the University organized the UAE Data for Happiness Hackathon Competition - Fujairah Brand in February of the years 2018, 2019, 2020, and 2021, and a research team from the University won the first place in the competition on the UAE level during the 2018 and 2021 rounds.
- 2. Providing Internal Research Funds:** The University funded several research projects in the four academic years and is continuing to offer Internal Research Grants for the current academic year 2021-2022. The principal investigators (PIs) of research teams have already submitted progress reports on their research projects and are scheduled to submit the final reports of their research projects in September 2018.
- 3. Encouraging Faculty Publications:** The University supports faculty publications in international reputable journals of high impact factors and provides publication fees on behalf of faculty members. USTF also encourages faculty participation in conferences on national, regional, and international levels and provides travel allowances, tickets, and conference participation fees.
- 4. Establishing USTF Council for Graduate Studies and Research (CGSR):** The University has established the CGSR at the beginning of the academic year 2017-2018 to handle processing and follow-up research projects submitted for internal funding. The council also organizes the annual students' research conference, training seminars and workshops.

Research Initiatives

The university research initiatives for the academic year 2018-2023 are in line with the UAE Vision 2021 and focuses on sustainability, artificial intelligence, smart cities, automation, COVID-19 pandemic, and distance learning. USTF encourages faculty and students to concentrate on these themes in their research efforts and graduation projects.

1. Sustainability

- a. The College of Pharmacy and Health Sciences and the College of Dentistry, along with other researchers in engineering, environment, information technology, and social sciences, can cooperate in joint research projects addressing sustainable human health in the UAE and the Gulf Region.
- b. The depleting conventional energy sources such as oil and natural gas and emerging renewable energy sources such as solar energy has led the UAE government to move from oil-based economy to knowledge-based economy and to host IRENA (International Renewable Energy Agency) in the Capital City Abu Dhabi. In harmony with these national efforts, the College of Engineering and Technology at USTF has started offering a new concentration in electrical engineering, power, and renewable energy. Both areas lie in the core of sustainability of energy sources in the UAE and Gulf Region. USTF considers this theme of research as one of its research priorities during the next academic years.
- c. In line with the UAE Innovation Strategy 2014 and the Commission for Academic Accreditation (CAA) in UAE requirement, USTF is teaching innovation and entrepreneurship as a university requirement course to all students who have successfully completed 60 credit hours. The method of teaching the course is unconventional and trains students on materializing their innovative ideas into real-world projects. USTF believes that research in innovation supports sustainability and promotes the culture of creative thinking among individuals of USTF community.

2. Artificial Intelligence, Smart Cities and Automation

- a. Objective 6.3 of Goal 6 of USTF Strategic Plan 2018-2023 can be realized by reducing energy and water consumption, installing the latest communication and information technologies in university buildings and use of computerized maintenance management system. These three actions are examples of research themes in the artificial intelligence.
- b. Application of artificial intelligence approach in conjunction with the use of alternative energy sources can lead to reduction in the on-campus energy and water use. Automatic shutdown of lights in vacant lecture halls, lab or any other university facility can reduce energy consumption. On the other hand, the use of treated wastewater for landscaping can ease pressure on more expensive water sources. Results of research in energy and water resources are not only beneficial for resources management at USTF but can set examples of best practices on national and regional levels.
- c. Providing USTF facilities with the latest communication and information technologies will require high initial capital investment but will certainly reduce costs on the long term. Installing videoconference facilities used in meeting with other institution and reduce time, efforts, and travel expenses. Smart rooms, labs and clinics increase teaching and learning efficiency and reduce cost. Research and feasibility studies can lead to improvement of university facilities and infrastructure.

- d. Integration of smart devices in facilities, homes, institutions, and services improve the quality of life and provide sustainable, smart solution to the challenges facing human. The holistic, innovative, and smart approaches in management of USTF facilities, including placing of work orders, for moving, spraying, and cleaning can be facilitated through application of artificial intelligence techniques. Automation of reporting, digital transformation, and usage of a computerized maintenance management system improves efficiency of USTF campus services.

3. COVID-19 Pandemic

- a. The wide spread of COVID-19 pandemic has revealed the urgent need for scientific research to produce vaccines to limit the spread of the disease, and at the same time it showed the growing need for social scientists to address the social problems that resulted from the outbreak of this deadly virus, with the use of scientific approaches that would organize, develop, and solve social problems in a holistic approach that takes into account the political, economic, and environmental aspects.
- b. Researchers at USTF belonging to the colleges of Pharmacy and Health Sciences, Dentistry, Engineering and Technology, and Business Administration are actively involved in research activities addressing the health, technology, and administrative aspects related to the COVID-19 pandemic.
- c. Faculty members in the colleges of Humanities and Sciences and Law are actively engaged in dealing with humanitarian, social, psychological, and legal aspects of the COVID-19 pandemic and exploring ways and means of minimizing its negative impacts on individuals and the society.

4. Distance Learning

- a. The outbreak of the deadly COVID-16 pandemic has forced the educational institutions around the globe to turn into online mode of course delivery to control the spread of the disease and protect public health among teachers and students alike.
- b. In a precautionary measure, the Ministry of Education (MOE) in the UAE has instructed Higher Education Institutions (HEIs) in the country to turn online until further notice. Since then, the theoretical courses at USTF are delivered online, while the practical courses are taught through the hybrid mode of education.
- c. These circumstances indicated the emerging need for distance learning, e-courses, and design of e-programs to be fully delivered online, irrespective to the COVID-19 health precaution. This area of research has encouraged faculty members in both sciences and humanities disciplines to conduct research on distance and e-learning modes and health, psychological, and social consequences.
- d. An additional important research area is the quality assurance on e-courses compared the same courses delivered face-to-face in lectures halls.

The USTF implementation of the university strategic plan document has clearly defined the research targets, timelines, and key performance indicators for the coming five years (2018-2023). One of the goals of Deanship of Graduate Studies and Research (DGSR) is annual assessment of the effectiveness of its initiatives and support to achieve the objectives of the research strategy. The Office of Institutional Planning and Effectiveness (OIPE) shall also carry out its annual assessment of the effectiveness of university research strategy.