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University of Khartoum Space Research Center:
Vision, Missions and Goals

Space Research Center – University of Khartoum (UofK)
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UofK Space Research Center:

UofK Space Research Center was established at University of Khartoum in December 2014 to act as an umbrella for all entities that have well established researches on space related activities at the university of Khartoum and also the new space researches to be initiated. In 2011, A Cubesat (Cube Satellite) project was established at the University of Khartoum, Faculty of Engineering, Department of Electrical and Electronic Engineering as the first satellite project in all Sudanese universities. Since then, a lot of space and satellite researches were completed and achieved huge successes. Two prototypes were designed, fabricated and tested successfully following the international standards of Cubesat designation. Also, a fully functional ground station was installed and operated to track and command satellites and universities' Cubesats. The figure shows the Cubesat prototype that designed, implemented and fabricated in the University of Khartoum laboratories.

Based on the success of the Cubesat project, and the research projects that were developed and designed; University of Khartoum established the Space Research Center with the



Cubesat project being the first project adopted on it. The Space Research Center has a wide scope and it is aiming to enrol all projects from all other faculties and departments at University of Khartoum that are related to space sciences and technologies.

UofK Space Research Center Vision, Missions and Goals :

- Provide the space technologies experiences for all researchers and engineers and developing their skills.
- Conduct research on the space technologies and satellite communications, fabrications and publish the results.
- Get the hand-on experience in the field of space technologies.
- Support and develop the multi-disciplinary field and researches which related to the space science and technologies.
- Prepare the strategic studies which related to space science and technologies and also the studies which related to the country development such as the agriculture fields, weather, remote sensing and the environments studies.
- Swap from using the space technologies as black boxes to be developed, designed and fabricated inside Sudan.
- Enable and help University of Khartoum to get enrolled in all local, national and international space technologies participation.
- Co-operate with all possible local and international space research centers to spread the knowledge and get all possible benefits.

UofK Educational Ground Station:

A professional educational ground station was installed and till now operating by the university engineers and undergrad students. It succeeds to track many universities Cubesats and small- satellites and also succeed to send commands and receive data from different types of satellites which are active in their orbit. The University of Khartoum educational ground station doesn't focus only on tracking and commanding the educational small satellites or Cubesat, it also used in tracking and receiving data from other types of application satellites. After receiving the data, the ground station engineers decode this received data and information using the ground station decoding programs and then analyze and study the results.

After this fully functional ground station was installed in University of Khartoum, there was an intensive rush and curiosity from all interested engineers and even undergraduate students to participate in the process of operating the ground station and to track a real satellite in its orbit. Therefore, the University of Khartoum ground station had the major roles in raising the awareness about the space and the different types of satellites and to provide the hand-on experiences and gain the knowledge by dealing with radios and antennas that are used in satellite tracking process.



Since the establishment of the Cubesat project, and then the Space research Center, there were periodically workshops and training session presented by the space center researchers for the interested university students and young professionals to make them aware about the newest technologies and ideas in the field of space and satellites (specially the small satellite), even the high school students were involved in these workshops and training sessions. Also many events and competitions related to educational satellites were organized and sponsored by the Space Research Center. The goals of all these events is to spread the awareness of the space and satellites benefits and effectiveness on our daily life and also to illustrate that, the small and educational satellite can do missions and collect useful data same as the professional expensive satellites.