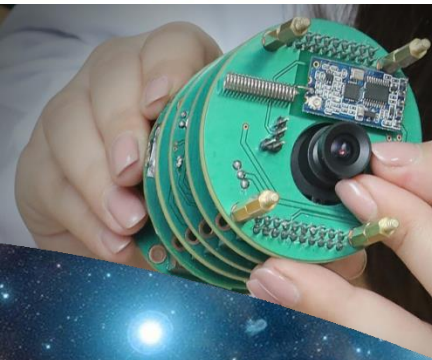
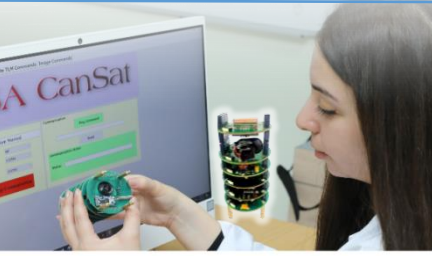


## EgSA-CanSat Satellite for Practical Learning of Space Technology



EgSA-CanSat Satellite



Ground Control Station



### What is a CanSat Satellite?

A CanSat is a small satellite that provides an affordable way to provide students with basic practical knowledge to many challenges in space technology such as building a satellite by themselves! Students will be able to design, build, launch and control a small plug and play satellite with electronic payload that can fit inside a small space such as a coke can. CanSat is launched and ejected from a high building or a balloon. Using a parachute, a CanSat slowly descends back to earth performing its mission while transmitting telemetry. Post launch and recovery data acquisition will allow students to analyze the level of success of the entire mission.

**Hands-on experiments to simulate the whole space system:** Students will perform hands-on experiments by themselves at low cost and short time for the entire space system components with its three segments which are:

- **Space segments:** EgSA-CanSat
- **Ground segment:** student's computer/ mobile phone as a command, control & receiving station
- **Launcher:** Drop from a high building, balloon, or drone by parachute.

### What will students learn in the EgSA-CanSat course?

- Experience the whole cycle of satellite development from mission definition and specification to full operation, including satellite assembly, integration, testing, launching, command & control, then finally receiving its captured images and other sensors measurements.
- The basic function of each satellite subsystem
- The different On-Board Computer (OBC) interfaces (Serial, I2C, SPI, PWM, Digital, and Analog) used in real satellite.
- Innovation Skills: The Satellite Educational Kit enables students to develop their own new modules or sub-systems through the user defined board to increase their hardware and software innovation skills.
- Design and build autonomous systems that can counter measure any unplanned situations.
- Designing a Fly-Back Type and a Rover-Back Type CanSat can be done based on the EgSA-CanSat platform because it has sufficient interfaces for servo actuations.
- A user can make his/her smart phone ground station and create their own ground station software application.
- Open source OBC (ATMEGA 2560) has a big community which enables users to share experience & learn from others.



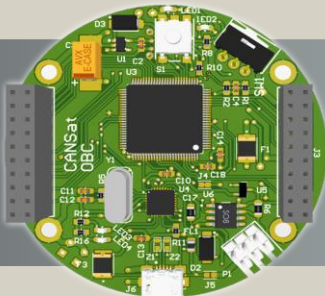
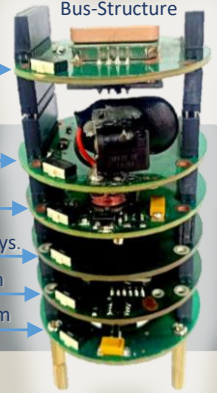
# Main features of EgSA-CanSat Satellite kit:

EgSA- CanSat Satellite Bus-Structure

## Plug and Play (Assembly, Integrate and Testing)

The kit is assembled, integrated and tested using already installed software. It can communicate with mobile apps as a ground station. Deploying the kit can be done using a parachute from high altitude (building, balloon, RC airplane).

- Attitude Determination & Control Subsystem
- Power Subsystem
- User Defined Subsystem
- On-board Computer Subsys.
- Payload Subsystem
- Communication Subsystem

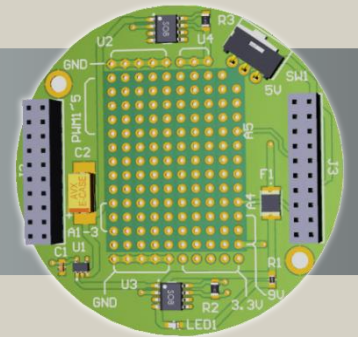


## On-Board Software Development

The kit is assembled, integrated and tested with a developed software. EgSA-CanSat kit has a well known and open-source On-Board Computer (OBC) which is ATMEGA 2560. The developer can develop both the on-board software (space segment) and the ground station software (ground segment).

## User-Defined Mission to increase students' innovation skills

A user can build his/her own mission / subsystem and implement it using the user board along with the existing boards (satellite subsystems). This advanced operation involves hardware and software development, and the possibility of adding new sensors.



## Pre-Installed OBC Software and Ground Station Application

The kit is supplied with a pre-installed basic on-board flight software for the EgSA-CanSat and basic ground station application for both computer and mobile phone for remote control and data reception from EgSA-CanSat satellite.

## Portable Ground Station

EgSA-CanSat ground station can be either laptop or mobile phone with Bluetooth connectivity. If a laptop is used as a ground station, two wireless connections are possible, RF and Bluetooth. Data and Images can be directly downlinked from the EgSA-CanSat to the ground station.



And many other space technology educational services ... Contact us to know more.