The Boston University Student Satellite for Applications and Training (BUSAT) is an innovative, student-designed, modular satellite that offers a rapid, easy assembly and integration, low cost, and accessibility to advanced technology at the university level. The modular design drastically reduces the time spent in the production of a new satellite, from mission identification to launch readiness. Since BUSAT incorporates many off-the-shelf components, overall cost is also lower than a similar custom model. Perhaps most importantly, the modularity of the mechanical and electrical interfaces within BUSAT allow fluidity in the design process, such that many diverse instruments and subsystems may be integrated in a variety of orientations within the satellite. This not only enhances the engineering design, but enables the scientific and educational missions.

Educational Mission

The BUSAT project offers engineering and science students the opportunity to experience much more than the theoretical side of space physics and engineering. Through direct experience, students gain insight into the entire design, testing, manufacturing, and operation real, working space flight hardware.

Over sixty undergraduate and graduate Boston University students participated in the BUSAT program during the Nanosat 5 competition (’07 -’09), making up thirteen subsystem teams and participating in several training seminars and review sessions.
Scientific Mission

The BUSAT mission will acquire energetic electron data near the poles and will simultaneously acquire optical images of auroral arcs from horizon to horizon.

This mission concept will be designed principally by BU students. The BUSAT program integrates many aspects important to space physics, from instrument design to basic plasma physics to environmental phenomenology, so that it can easily become the centerpiece for both classroom instruction and student research topics.

BUSAT has five major instrument subsystems, including the following:

- Auroral Imager
- Magnetometer
- Langmuir Probe
- VLF Receiver
- Imaging Electron Spectrometer (IES)

Engineering Mission

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Get Involved!

Students:
The BUSAT program is actively seeking interested science and engineering students for several satellite subsystem positions. Real experience with space flight hardware is available to motivated individuals. Additionally, BUSAT has been the platform for several independent research projects. Individual inquiries are welcome.

Faculty/Professionals:
Over the two years of the Nanosat-7 competition, BUSAT teams will take part in several mentor reviews and will consult with many faculty and industry professionals. Please let us know if you would like to be involved.

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