

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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A HISTORY OF UMSATS: NEARING 10 YEARS OF STUDENT SATELLITE DESIGN SUCCESS

Abstract

The University of Manitoba Space Applications and Technology Society (UMSATS) is a student satellite design team at the University of Manitoba that designs, builds, and tests 3U CubeSats to compete in the Canadian Satellite Design Challenge (CSDC). Founded in 2010, UMSATS has grown from its humble beginnings to a group of over 60 students from a wide range of faculties including engineering, science, law and kinesiology. The team has won numerous awards, including first place at the fourth Canadian Satellite Design Challenge this past year. Prior to this, UMSATS won second place at the 2010/2012 CSDC, the UrtheCast Outreach Award at the 2012/2014 CSDC, and second place at the 2014/2016 CSDC.

From its onset, UMSATS has been committed to innovation and student learning: choosing to develop all subsystems from the component level to create novel designs and enhance the technical knowledge of its members. Over the course of four iterations of spacecraft development, our students have learned valuable hands-on skills in engineering, science, project management, business, and a myriad of other skills necessary to develop this complex project.

This paper details the history of UMSATS from inception to present day, describes the design evolution of our 3U CubeSat, and details lessons learned that have helped UMSATS remain a successful active student design team since 2010. This includes team structuring, governance, technical documentation, institutional knowledge retention, as well as methods of member recruitment, training and retention. In a competition where there tends to be high team and member attrition rates, UMSATS stands out as a team that has continued to compete and succeed year after year and remain a fierce competitor.