

# Small Satellite Architectures and Technologies

<b>Host Institute</b>	ISAE-SUPAERO Toulouse
<b>Objectives</b>	The module offers the space summer students the opportunity to get the big picture of small satellites architectures and sub-systems technologies. The module provides the attendees with the relevant background to finalise the preliminary design of the microsatellite as part of workshop carried out by the students as a guiding thread spanning over the summer programme
<b>Prerequisites</b>	Background on mechanical and electric engineering Basics on control systems,
<b>Contents</b>	Space environnement - Different contributions and Characteristics - Effects on materials and components Microat/Cubsat architectures - Platform and payload organisation - Examples of mission requirements and design - Overview on verification and validation processes Power subsystem - Primary power sources: solar cells... - Secondary power: batteries - Power distribution and protections Attitude control system - Performance requirements and perurbations - Sensors and actuators  Microcat Design Workshop using simulation software
<b>Duration</b>	Five 3-hour lecture sessions plus 4-hour workshop
<b>Coordinator</b>	Prof. Michel Bousquet
<b>Bibliography</b>	Space Mission Analysis and Design, Ed W. Larson, 2013 Space Mission Engineering, The New SMAD, Ed J. Werstz 2011 Satellite Communications Systems, G. Maral & M. Bousquet, Wiley 2010
<b>Assesment:</b>	Written exam