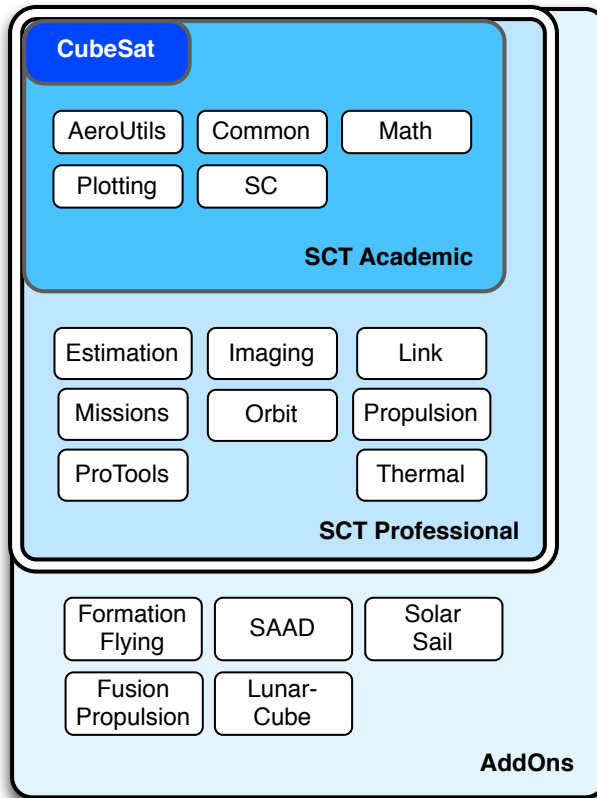


Spacecraft Control Toolbox Edition Comparison

Topic	Feature	CubeSat	SCT Academic	SCTPro
License		University team	Students, Classroom	Single User or Site License
Attitude Dynamics and Control	<i>Rigid body, gyrostat</i>	✓	✓	✓
	<i>Multibody, flex, wire</i>		✓	✓
	<i>Control</i>	PID 3 axis	+ loop shaping, discrete time, state space, LQ, eigenstructure assignment	
	<i>Pointing budgets</i>		✓	✓
	<i>Sun nadir, bias momentum, spinner with wheels</i>			✓
	<i>Landing and ascent GN&C</i>			✓
Mission Planning	<i>Attitude profiles, observation time window, repeat ground track</i>	✓	✓	✓
	<i>Orbit maneuvers, fuel budgets</i>			✓
Disturbances	<i>Spacecraft model</i>	Flat plate model	+ extended mesh model/CAD	
	<i>Earth drag, optical, magnetic</i>	✓	✓	✓
	<i>Additional planets, RF</i>		✓	✓
Orbit Propagation	<i>Point mass</i>	✓	✓	✓
	<i>Gravity models</i>	J2 only	✓	✓
	<i>High fidelity propagation</i>			✓
Enviroms/Ephem	<i>Magnetic dipole, J70 atmosphere, almanac</i>	✓	✓	✓
	<i>Standard atmosphere, other planets, JPL ephemeris</i>		✓	✓
	<i>High fidelity models</i>		✓	✓
Subsystems	<i>Link: optical, RF, budgets</i>	Simple RF links only		✓
	<i>Propulsion: chemical, electric</i>	Ideal rocket only		✓
	<i>Thermal: general, isothermal</i>	Isothermal only		✓
Actuator/Sensor Models	<i>Reaction wheel, blowdown propulsion</i>		✓	✓
	<i>Gyros, sun sensor, horizon sensor, magnetometer</i>		✓	✓
	<i>Star camera model, high fidelity RWA, GPS models</i>			✓
Estimation	<i>Kalman Filters</i>		✓	✓
	<i>Attitude and Orbit Determination, Stellar ID, Optical navigation</i>			✓
Imaging	<i>Image processing, optics</i>			✓
Add-on modules	<i>Formation Flying</i>			✓
	<i>Fusion Propulsion</i>			✓
	<i>Solar Sail</i>			✓
	<i>Spin Axis Attitude Determination</i>			
	<i>LunarCube</i>	✓	✓	

Spacecraft Control Toolbox Module Organization



The Professional Edition includes all of the CubeSat Toolbox and Academic Edition, with the addition of the modules shown. Add-on modules require the Professional Edition, with the exception of LunarCube, which may be added to CubeSat or Academic.

The CubeSat Toolbox contains the CubeSat module plus supporting functions required from the Professional Edition. The Academic Edition includes the CubeSat Toolbox along with the complete modules shown.