



Politecnico di Milano
Master of Science in
Space Engineering

Orbital Mechanics Project

Group 33

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Assignment 1: Interplanetary Explorer Mission

Mission requirements

Mission analysis outputs

2.1 Design process

2.1.1 Initial choice for the time windows

2.1.2 Additional constraints considered

2.1.3 Transfer options exploration, analysis and comparison

2.1.4 Selection of the final solution

2.2 Final solution

2.2.1 Heliocentric trajectory

2.2.2 Powered gravity assist

2.2.3 Cost of the mission

Assignment 2: Planetary Explorer Mission

Mission requirements

Mission analysis outputs

4.1 Nominal orbit

4.2 Ground track

4.3 Orbit Propagation

4.4 History of the Keplerian elements

4.5 Orbit evolution representation

4.6 HF filtering

4.7 Comparison with real data

4.7.1 Satellite selection

4.7.2 Comparison with our model

Bibliography