ASTREA CONSTELLATION

Duration 231 days

1. SATELLITE DESIGN

Duration 156 days

- 1.1 Spacecraft subsystems
  - Duration 94 days
  - 1.1.1 Electrical Power System
    - Duration 23 days
    - 1.1.1.1 Primary Power Source — Duration 6 days
    - 1.1.1.2 Secondary Power Source
    - 1.1.1.3 Distribution and Control — Duration 2 days
  - 1.1.2 Thermal Management
    - Duration 6 days
    - 1.1.2.1 Temperature requirements — Duration 5 days
    - 1.1.2.2 Thermal Control — Duration 6 days
  - 1.1.3 Telemetry & Command
    - Duration 23 days
    - 1.1.3.1 Telemetry Unit — Duration 9 days
    - 1.1.3.2 Command Unit — Duration 5 days
    - 1.1.3.3 Antennas — Duration 4 days
  - 1.1.4 AOCS
    - Duration 66 days
    - 1.1.4.1 AOCE (Attitude & Orbit Electronics) — Duration 26 days
    - 1.1.4.2 Magnetic torquers — Duration 5 days
    - 1.1.4.3 Sensors — Duration 3 days
    - 1.1.4.4 Momentum & Reaction Wheels — Duration 5 days
    - 1.1.4.5 Thrusters — Duration 5 days
- 1.2 Structure
  - Duration 91 days
  - 1.2.1 Mechanism design — Duration 9 days
  - 1.2.2 Electric ways — Duration 10 days
  - 1.2.3 Heat ways — Duration 10 days
  - 1.2.4 Deployable
    - Duration 91 days
    - 1.2.4.1 Antenna — Duration 17 days
    - 1.2.4.2 Solar Panels — Duration 14 days
- 1.3 Payload
  - Duration 44 days
  - 1.3.1 Antennas — Duration 10 days
  - 1.3.2 PDHS — Duration 17 days

2. ORBITAL DESIGN

Duration 43 days

- 2.1 Orbit parameters
  - Duration 24 days
  - 2.1.1 Drifts — Duration 9 days
  - 2.1.2 Inclination — Duration 10 days
  - 2.1.3 incV budget — Duration 9 days
  - 2.1.4 Altitude — Duration 10 days
- 2.2 Legislation — Duration 5 days
- 2.3 Constellation Architecture
  - Duration 43 days
  - 2.3.1 Phase Shift — Duration 14 days
  - 2.3.2 Growth & Replenship — Duration 14 days
  - 2.3.3 Types of constellation — Duration 15 days

3. LAUNCH SYSTEMS

Duration 87 days

- 3.1 Satellite deployer
  - Duration 77 days
  - 3.1.1 Requirements — Duration 4 days
  - 3.1.2 Main Companies' Deployment Systems — Duration 2 days
  - 3.1.3 Decision & Hiring — Duration 2 days
- 3.2 Market Study of Vehicles
  - Duration 10 days
  - 3.2.1 Requirements — Duration 2 days
  - 3.2.2 Main Companies' Launch Systems — Duration 4 days
  - 3.2.3 Decision & Hiring — Duration 4 days

4. OPERATION

Duration 101 days

- 4.1 Communications protocol
  - Duration 4 days
  - 4.1.1 Satellite to Satellite — Duration 4 days
  - 4.1.2 Satellite to Ground — Duration 2 days
- 4.2 End of life strategy — Duration 7 days
- 4.3 Ground Station
  - Duration 7 days
  - 4.3.1 Operation Protocol — Duration 5 days
  - 4.3.2 Design
    - Duration 7 days
    - 4.3.2.1 Antennas — Duration 7 days
    - 4.3.2.2 Software — Duration 7 days
    - 4.3.2.3 Transceiver — Duration 7 days
    - 4.3.2.4 Tracking Mechanism — Duration 7 days

5. FINANCIAL PLAN

Duration 126 days

- 5.1 Operational Costs
  - Duration 3 days
  - 5.1.1 Fixed
    - Duration 2 days
    - 5.1.1.1 Maintenance — Duration 1 day
    - 5.1.1.2 Insurance — Duration 2 days
    - 5.1.1.3 Administration — Duration 2 days
    - 5.1.1.4 Taxes — Duration 2 days
  - 5.1.2 Variable — Duration 3 days
- 5.2 Manufacturing Costs — Duration 4 days
- 5.3 Product Economic Feasibility Forecast — Duration 5 days

6. MANAGEMENT

Duration 230,66 days

- 6.1 Project Planning & Schedule
  - Duration 230,66 days
  - 6.1.1 Organization and Meeting — Duration 84 days
  - 6.1.2 Schedule Maintenance — Duration 84 days
  - 6.1.3 Implem — Duration 84 days
- 6.2 Task Manage & Tracking
  - Duration 230,66 days
  - 6.2.1 Monitoring & Tracking — Duration 84 days
  - 6.2.2 WBS maintenance — Duration 84 days
- 6.3 Interface
  - Duration 230,66 days
  - 6.3.1 Program Monitor — Duration 84 days
  - 6.3.2 Reporting — Duration 84 days

7. TECHNOLOGY DEMONSTRATION

Duration 12 days

- 7.1 Satellite prototype — Duration 5 days
- 7.2 Simulation — Duration 7 days
- 7.3 Render Satellite — Duration 7 days