The International Space Station is a versatile research institute and a large observation platform in outer space for scientific research and applications. It also serves as a test centre to facilitate introduction of new technologies. This permanently human occupied outpost in outer space also serves as a stepping stone for further space exploration.

The European participation in the International Space Station

- **Automated Transfer Vehicle (ATV):** Resupplies and services the Space Station
- **Permanent Multipurpose Module (PMM):** Primarily used for storage of spares, supplies and waste on the ISS
- **Node 3:** Connecting modules
- **Cupola:** A dome-shaped module with windows for observing and guiding operations outside of the Station
- **European Robotic Arm (ERA):** Installs equipment and supports astronauts
- **Node 2:** Connecting modules
- **European Columbus Laboratory**
- **Payloads on Express Pallets,** which house external experiments
Specifications

DIMENSIONS AND MASS:
- Width: 108 m
- Length: 74 m (~88 m incl. ATV or Progress)
- Height: 45 m
- Pressurized volume: 1.200 m³
- Total mass at completion: ~ 450,000 kg

PROPUSSION
Monomethyl hydrazine fuel and Nitrogen tetroxide oxidizer for orbit raise and attitude control when the Control Moment Gyros or Gyrodynes are not used or to unload them.
To prevent wearout of the Stations rocket motors, attitude control and re-boost functions are also performed by visiting spacecraft such as the European Automated Transfer Vehicle, the Soyuz, Progress and Space Shuttle.

COMMUNICATIONS INFRASTRUCTURE
TDRS:
- 50 Mbps Ku-band link (up-link and down link with the same bit-rate)
- 192 kbps S-band down-link, 72 kbps S-band up-link

ENVIRONMENTAL CONTROL
- Permanent crew: 6
- Internal pressure: 958 - 1013 hPa
- Internal temperature: 18°C - 27°C
- Temperature and humidity control, Carbon dioxide removal, Trace contaminants control, Atmosphere components monitoring, Oxygen production, Waste water processing to potable water, Pre-treated urine to urine distillate processing
- Crew urine and fecal collection and processing

ELECTRICAL POWER
- Maximum power output: 110 kW (Provided by large solar arrays. Power is converted to 120 V DC by the station)

LAUNCH CONFIGURATION
Launched in components on different launch vehicles, provided by 4 of the 5 participating partners and assembled in orbit.
- 1st launch: 20 November 1998
- Assembly complete: 2011

ON ORBIT CONFIGURATION
Final assembled configuration as shown in drawings
- Orbital altitude: 370 - 460 km
- Orbital inclination: 51.6°
- Orbital velocity: 7.7 - 7.6 km/s (~ 27,500 km/h)
- Attitude: Torque equilibrium attitude control and X-vector in velocity direction
**Specification**

**AVAILABLE LAUNCH VEHICLES:**
European Ariane-5 launcher  
Japanese H-IIA launcher  
Russian Proton launcher  
Russian Soyuz launcher  
United States Space Shuttle

**AVAILABLE TRANSPORT VEHICLES FOR CREW AND/OR SUPPLIES:**
European Automated Transfer Vehicle (ATV): servicing and logistics vehicle  
Japanese HII Transfer vehicle (HTV): servicing and logistics vehicle  
Russian Soyuz vehicle: manned space craft that accommodates 3 cosmonauts  
Russian Progress vehicle: servicing and logistics vehicle  
US Space Shuttle: retiring 2011

**PARTNERS:**
Europe, European Space Agency (ESA)  
Canada, Canadian Space Agency (CSA)  
Japan, Japan Aerospace Exploration Agency (JAXA)  
Russia, Roscosmos  
USA, National Aeronautics and Space Administration (NASA)

http://erasmus.spaceflight.esa.int